THE DESIGN AND CONSTRUCTION OF BELFRY STAGES AND SPIRES IN STONE AND BRICK.

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Introduction.

FROM the commencement of architectural history two geometrical forms of composition have impressed themselves on men's imaginations as being the grandest creatable by human invention, namely, the vertical prism, or "tower," and the acute pyramid, or "spire." The tower, whether used as a belfry, as a fortification, or as a monument of victory; whether the column of the Romans, the jaya sthamba of the Jains, or the minar of the Pathans, was pre-eminently the token of worldly power and success. The spire, on the other hand, whether it took the form of Egyptian obelisk, Etruscan tumulus, Buddhist tee, prehistoric standing-stone, or Zimbabwe "tower," was always associated with religion and exalted sentiments generally. When, therefore, the mediæval designers of Europe began, in the twelfth century, to surmount with spires the bell towers they erected for their religious establishments, they combined in one perfect whole the two most sublime forms known to ancient architecture; fitly showing forth that combination of spiritual and temporal power which was the mediæval church ideal: a combination more consciously symbolised by the superimposed cock, cross, and orb with which many of these steeples were terminated. Restless modern minds have seen in the steeple fresh meanings, some perhaps rather far-fetched. "The spire," says Mr. Francis Bond in his account of English Gothic architecture, "was a concession, the chief concession in Gothic architecture, to religious symbolism." (Unfortunately he does not quote any mediæval writer to confirm this.) According to A. W. N. Pugin, "the use and intention of spires may be considered under two heads: (1) *Natural* and (2) *Symbolical*;" (1) "Is a covering or roof to the tower (necessary for the suspension of bells)"; (2) "to make that roof an emblem of the Resurrection and to elevate the great symbol of our redemption," *i.e.* the Cross.

Perhaps Charles Kingsley most fully expressed the nineteenth-century view of spires when he said: "The especial want of all Greek and Roman buildings with which we are acquainted is the absence—save in a few and unimportant cases—of the pyramidal form. . . . Their builders were contented with the earth as it was. There was a great truth in that, which I am the last to deny. But religions which, like the Buddhist or the Christian, nurse a noble self-discontent, are sure to adopt sooner or later an upward and aspiring form of building. It is not merely that, fancying heaven to be above earth, they point towards heaven. There is a deeper natural language in the pyramidal form of a growing tree. It symbolises growth, or the desire of growth. The Norman tower does not aspire to grow. . . . For it has

no touch of that unrest of soul which is expressed by the spire, and still more by the compound spire, with its pinnacles, crockets, finials, which are finials only in name, for they do not finish, and are really terminal buds, as it were, longing to open and grow upward."

It is unnecessary to quote further examples of this kind of sentiment, especially as it is now somewhat out of fashion; a fact of which we should not be, perhaps, altogether proud. By way of contrast may be noted a whimsically practical view expressed by Price in his *British Carpenter* (1753): "None of them (spires) are executed without weathercocks, or vanes (and which I am led to think was the cause of erecting them)."

Poets have recognised the essentially poetic beauty of a well-proportioned spire. Wordsworth, who was so notably the poet of "still life" and "things seen," wrote how

> "Hope had her spire
> Star high and pointing still to something higher."

Other references are well known, such as the fine but ungrammatical

> "Spires whose silent finger points to heaven."

And Tennyson wrote how, at Coventry,

> "I hung with grooms and porters on the bridge
> To watch the three tall spires."

Many great painters and draughtsmen have delighted in the delineation of steeples, even at a time when steeples were condemned as barbarous by a super-refined generation. Artistically, as Mr. Bond points out, "the spire's special value lies in the strength of contrast which is afforded between the vertical lines of the spire and the prolonged horizontal lines of nave and chancel. Equally effective is it whether central, converting all the projected masses of the buildings into one converging pyramid; detached; or giving the noblest of façades to the parish church."

In these days of augmented interest in "town planning" steeples should not be forgotten by would-be designers of perfect cities. Many city-scapes are only saved from utter ugliness by the graceful or curious steeples which raise smoke-blackened or weather-bleached heads protestingly out of what is otherwise a welter of mingled stock bricks and Welsh slates. The value of a small acute spire to form a point of contrast with any large rotund structure—for example, St. Martin's, Ludgate, in front of St. Paul's Cathedral, London—has been often pointed out and was fully realised by the ancient Egyptians, who placed obelisks immediately in front of their mighty pylons. There are few more appropriate terminations for a vista (especially a narrow vista) than a steeple, and they are no less successful rising out of groups of trees as centre points in large open spaces.

A picturesque steeple is, moreover, a redeeming feature in many a mean street, where it shines the more brightly by contrast with sordid surroundings, and where it manifests a sort of personality to the man-in-the-street, who, passing it day by day, greets it as an old friend, rejoices when it is kept in good repair, and feels an almost personal shame when vandals "preserve" it by burying its time-given beauties under three coats of drab-coloured oil paint (as recently happened to an example of the essayist's acquaintance).

Steeple construction is exceedingly simple and safe, yet a lofty spire never fails to impress the commonalty as an almost miraculous piece of work—a subject for civic boasting and local pride. This is, perhaps, not a very elevated reason for spire building, but, human nature being what it is, we cannot (nor ought we to) entirely ignore it.

Nor should the *use* of a steeple as a belfry be forgotten. Bells have been condemned as barbarous and altogether objectionable noise-producers (see page 628); but good bells are

always pleasant to the ear (ascetics have denounced them for that reason), and their music has been appreciated by such men of taste as Cowper, Hood, Longfellow, and Tennyson :—

"What sound was dearest in his native dells?
The mellow lin-lan-lone of evening bells,
Far, far away."

There is at present a regrettable lack of interest in steeple design; clergymen, and even some architects, preferring to spend on elaborate chancel furniture, seen only by the congregation and only enjoyed by the officiating clergy, the money which might have provided a simple belfry and spire of wood, if not of stone, visible to all men, and not less visible to God than a brazen screen or an elaborate reredos. "These things ought ye to have done and not left the other undone."

SPIRES IN ANCIENT TIMES AND IN ASIA.

The subject of this essay forbids detailed consideration of the above, which were developed independently of belfry stages; but in order to understand the continued popularity of spires it may be well to sketch the history of the spire idea before it was joined to the tower idea to produce the mediæval steeple. Though it is not necessary here to collect spire origins—like the needlework patterns spoken of by "Water-Poet" Taylor :—

"With much praise and industrie,
From scorching Spain and freezing Muscovie,
From fertile France and pleasant Italie,
From Poland, Sweden, Denmarke, Germanie,
From spacious China and the Kingdoms East,
And from Great Mexico, the Indies West."

Mere bulk, however unadorned, has always appealed to "the vulgar," and, as pyramidal bulk is bulk in its most stable form, monumental pyramids were perhaps the first manifestations of the spire idea. Of bulky, low-pitched spire forms, the earliest type is the conical cairn or tumulus found all over the world. This, made square in plan, vast in size, and cased with polished stone, became the pyramid of Egypt, the very mention of which suggests all that is great and enduring. Circular in plan, heightened, rounded domically and finished with an elaborate finial, the tumulus became a Buddhist stupa, which, by reduction of the dome and enlargement of the finial, led to such developments of monumental art as the dagoba of Burma, the Chinese pagoda, the "Orissa dome," and the Hindu vimana. The Greeks raised the pyramid on a square stage and built the Mausoleum of Halicarnassus, one of the wonders of the ancient world. The Etruscans associated a central tumulus with four cones on a square base in such works as the "tomb of Aruns"; and their successors, the Romans, placing a tumulus on a circular tower over a square base, produced the huge mole of Hadrian, or finished a little temple with a pyramidal roof in such sepulchral monuments as the "tomb of Absalom" at Jerusalem. After the Roman Empire's decay tumulus spires became extinct in Europe save for a few unimportant examples.

Height, combined with slender tapering outline, appealed to the more cultured class in the early world, and, as this was also the religious class, the slender spire form acquired symbolic meanings, varying according to the refinement or sensuality of the religion and culture involved. Of slender spires, and in fact of the modern spire idea, the original form was the menhir or standing-stone, which the Egyptians elevated on a pedestal and refined into the obelisk. It is interesting, as showing the Egyptians' admiration for obelisks, to note that Senmut, the architect, appears to have been more famous for the two electrum-pointed obelisks he erected at Karnac for Queen Hatshepsut than for the very beautiful temple he built at Deir-el-Bahri for that royal lady. Though certainly Amenhotep Hepu's son (that

first apostle of conscious originality in architecture) did not include obelisks among those structures of which he said: "I did not imitate what had been done before." The Romans adopted the obelisk and in some cases, for example "Pilate's tomb" at Vienne, it resembled our idea of a spire; but, with all its grandeur, their architecture was too true a child of the South to have any liking for pointed roof outlines, except in monuments and small detached structures.

Ancient spires, whether pyramids or obelisks, are clearly distinguished from mediæval European examples by the facts that the spire was built for its own sake as a monument, and that ancient designers never raised spires on lofty towers—for one reason, because towers were then built only for military or astronomical purposes, and therefore required flat tops.

BELFRY STAGES AND SPIRES IN CHRISTIAN EUROPE.

For historical purposes Europe may be divided into four steeple-building provinces:—

(*a*) North-Eastern Europe.

(*b*) France—except the south.

These are the provinces wherein the mediæval spire originated. It is uncertain in which province spires first appeared, but they were first built of stone in France. France is placed second here because it naturally leads to the next province—

(*c*) Great Britain.

Distinct from the above, yet powerfully influenced by (*a*) and (*b*), is the last province—

(*d*) South-Western Europe.

SPIRES AND BELFRY STAGES IN NORTH-EASTERN EUROPE (GERMANY, AUSTRIA, SWITZERLAND, BELGIUM, HOLLAND, DENMARK, AND SCANDINAVIA).

The first spires in this province were high-pitched timber roofs on rectangular towers, both roof and tower being usually very plain. Almost, if not quite, as early were the conical spires which capped the round towers and turrets found in German and Flemish Romanesque architecture. "Tallness of roof appears always to have been considered a beauty by German architects," and, according to Fergusson, "it is by no means clear that the spire, properly so called, is not an invention from the banks of the Rhine." The idea of reproducing these timber spires in stone seems to have first occurred to the builders of the Rhenish district of Germany in the twelfth century, not, perhaps, altogether without inspiration from France; and thence stone and brick spires spread all over North-Eastern Europe and ultimately into Italy and Spain. The roof of Sompting Church tower shows German influence in English pre-Conquest work.

Three forms of spire (figs. 18, 19, and 20*) were invented in North-Eastern Europe. Of these, figs. 18 and 20 are octagonal in plan, while fig. 19 may be either octagonal or square set diagonally. Fig. 18 is sometimes found in Britain and is the most pleasing of the three, but none of them look really well in stone, and the belfry stages they surmount are as barren and uninteresting as such structures can be made. Spires constructed of open tracery work are a later development, peculiarly German and very suggestive of timber work.

Brick steeples being treated of in a separate part of this essay, what follows is intended to apply more especially to stone spires and belfry stages.

In the thirteenth century, subsequent to the period of anarchy called the "Great Interregnum," the native German Romanesque style, founded on the Lombardic, and used all over North-Eastern Europe, was almost completely superseded by French Gothic, which had

* The illustrations are given at the end of the Paper.

already (1248) been adopted for Cologne Cathedral—but the local forms of spire continued in use, especially for buildings of secondary importance. Also, in the following century the open-work spire was developed, carried to mechanical perfection, and introduced into the adjoining provinces. One German feature was never abandoned and strongly influenced late French Gothic, Italian Gothic, and early British Gothic revival work, namely, the use of gables instead of a level wall-head between tower and spire. Freiburg shows a characteristic late treatment of these gables, which are there purely ornamental and practically part of the pierced parapet.

For important church steeples, belfry stages and spires of French type became the rule but treated with a superabundance of attenuated detail not permitted in France till a late date. The late German Gothic spire was crocketed and finialled *usque ad nauseam*; its sides were cut into open tracery or scarcely more solid panelling, and it sprang from a pinnacled and parapeted base which obscured its junction with the belfry stage. Belfry stages in the best examples (*e.g.* Ulm and Freiburg) maintained their position and distinctive character as such; strengthened by buttresses, overlaid with lace-like veils of tracery (Strasburg and Ratisbon), and crowned by pinnacled open parapets, they are often fine pieces of design and mason-craft. Yet not seldom (St. Stephen's, Vienna, and Cologne Cathedral) they are buried in a mass of detail which envelops the steeple from base to apex and renders it difficult to distinguish between belfry and spire. In the fifteenth century, German and Flemish masons had come to regard steeples as opportunities for exhibiting the complete mechanical perfection they had reached; but they did not know how to use their craft to the best architectural advantage, and even from the mechanical point of view the late German steeples are neither more daring in construction nor stronger in detail than the south-west steeple of Senlis or the western belfry stages of Reims. In fact it may be doubted whether even Strasburg's 466 feet of almost infernal ingenuity and Ulm's monster spire 529 feet in total height are architecturally "worth while." Still, it must be admitted that some of the late Gothic steeples in North-Eastern Europe (including those completed in the nineteenth century, such as Ulm and Cologne) are among the most imposing buildings in the world; several of them exceed 400 feet in height, and their elaborate detail in some cases increases their apparent dimensions. The principal German mediæval steeples seldom have a steeper pitch than 82.58°, and are usually shorter than the towers they surmount.

As compared with England, the lack of good village church spires is very noticeable; to quote Fergusson: "The village churches of Germany" (and of the whole North-Eastern province) "were little more than plain halls. The single spire, which was intended to be their external ornament, was generally placed on a square tower without buttresses or break, and the transition between the two parts was seldom even broken by battlements or pinnacles. After the Reformation, as may easily be understood, it was worse."

After the introduction of Renaissance detail in the sixteenth century stone spires were almost entirely abandoned, and wooden spires degenerated into vulgar bulbous conglomerations such as no respectable Tartar would have perpetrated. A seventeenth-century manuscript treatise exists which gives proportions for the parts of a church. In it the tower walls are stated to be 5 feet thick for every 100 feet of height, and the ground floor of tower to be as high as the whole tower is broad, the upper floors being regulated accordingly. It does not appear to contain any reference to spires.

In modern times, under Gothic revival influence, some good spires have been erected in North-Eastern Europe, and several ancient ones have been completed or restored. Recently some interesting steeples have been built in a free style of *l'art nouveau* type. They are far from being "good," though Teutonic new art is certainly inclined to be more severe and less wriggly—also less refined—than that of France.

SPIRES AND BELFRY STAGES IN NORTHERN FRANCE.

To the student of steeple architecture France is a most interesting province. There the bold experiments were made, there the bright and clever details were invented, which supplied inspiration to the architects of other provinces at all periods, except a few hereafter to be referred to.

In order to understand French mediæval architecture it is necessary to have some idea of the state of that part of Europe during its great creative steeple-building epoch, that is, from 1100 to 1300, after which period the spires erected in France were to a certain extent reproductive, or influenced by backwashes of inspiration from Flanders, England, and after the Renaissance, Italy.*

The facts are so well known to students of French art that they need only be briefly noted here. Until wars, religious persecutions and foreign aggressions had welded Franks, Burgundians, Normans, more or less Latinised Celts, and primitive Basques into a united French nation, France was divided into provinces that were practically independent of each other in every way save in their common acknowledgment of the suzerainty of the King of the Ile de France, who ruled in Paris. These provinces were divided roughly into (*a*) north and east of the Loire, Normandy, Brittany, France proper, and Burgundy, all except Brittany inhabited by peoples having an admixture of Teutonic blood; (*b*) south of the Loire, Provence, Aquitaine, Anjou, and Auvergne, peopled by more purely Celtic races and retaining traces of Roman culture.

It is impossible to trace here the process by which Frankish culture and dominion were gradually extended over the adjoining provinces, but it may be noted that lofty spires are a northern feature which was never adopted by the southern provinces, with the exception of Anjou, where comparatively acute spires are found as early as in the Ile de France.

In this essay the spire architecture of Southern France will be referred to in the South-West European district (see page 615), leaving for consideration here the Ile de France, or central district, Normandy, Burgundy, and Brittany: Flanders being counted as part of North-Eastern Europe.

Adopting the classification outlined on page 616, the spires of Normandy belong to Types I. and II., with a few of Type III. (in this, as in some other respects, they resemble English work); those of Central France belong to Type III., with a few of Types I. and II. The Norman bell towers were square, and the earliest were capped by stone pyramids or timber spires. The stone pyramids were low-pitched and evidently of lithic origin; the courses of stone being treated as "weatherings" and having no imitation tiles carved on them. Thaon is the best known of these pyramids. It has no angle beads and is pierced by four lucarnes, or spire lights (which, as they are all on the same level, cannot have been holes for crossed tie-beams, as has been asserted). The timber spires were much more acute than the stone pyramids and were covered with tiles, slates, or shingles, cut into fish-scale or other shapes. These timber spires were frequently octagonal, the squinches being covered with small pyramids (*e.g.* Alzy, near Château Thierry) or with semi-pyramids (*e.g.* St. Etienne at Vignory). Low stone pyramid spires were abandoned under French influence, but square belfry stages still remained characteristic of Norman work.

In Central France, on the other hand, the Type III. spires of the south-west (*e.g.* St. Leonard, Haute Vienne, and Uzerches, Corrèze), with their octagonal intermediate stage between square tower and octagonal spire, were adopted and perfected. In the *clocher* of the

* "The great merit and the great secret of French architecture, as practised in the thirteenth century, is that it is original, and the architects, uninfluenced by precedent, were doing the best they could to attain a perfectly definite aim, and doing this with an earnestness that has never been equalled, and on a scale that has seldom been surpassed." (*Fergusson.*)

Trinity at Vendôme are found all the elements of the Central France steeples; these are as follows: a tower, having strong buttresses; a belfry stage, having two separate windows in each of its faces; an octagonal stage (which became the bell chamber), having a pinnacle or turret (at Vendôme semicircular in plan) over each squinch-cover* of the square tower; and a spire nearly as tall as the tower it surmounts. At Chartres south-west steeple this composition is found much improved in the twelfth century. Chartres is too well known for description here. According to Viollet-le-Duc it is: "La plus grande (flèche) que nous possédions en France. La simplicité de la masse, la juste proportion de ses diverses parties, son heureuse silhouette [a point considered of great importance in spire design by M. Viollet-le-Duc], en font une œuvre architectonique qu'on ne saurait trop méditer." At St. Denis (1215) the composition was lightened by the open character of the angle pinnacles and by curious slits in the sides of the spire. At Laon the turrets are made especially large and are in two stories; at Etampes they are three stories high; while at Senlis (south-west spire) a maximum of elegance is attained: the proportions of all the parts are heightened and refined, and all parts of the belfry stage are freely adorned with carving and sculpture. All these spires are covered with fish-scale carving in imitation of tiles; they have prominent angle beads and very often intermediate beads in the centre of each side of the spire; and from at least as early as 1215 their angles and pinnacle roofs are richly crocketed. The incomplete western steeples of Reims Cathedral (1260) and the now destroyed spires of St. Nicaise at Reims (illustrated in Viollet-le-Duc's *Dictionnaire*) show the latest development of steeple building in Central France before the troubles of the fourteenth century. They are splendid pieces of work and gain by the suppression of some of the features found at Vendôme and Chartres.

Returning to Normandy, after the introduction of the style of Central France the early timber spires are found reproduced in stone with French Gothic details. Figs. 2 and 14 illustrate spires of this class, which is also found in the adjoining parts of Northern France. But in the Caen district a very interesting and distinct type arose: this has an octagonal spire placed directly on a square belfry stage of great height. In each face of the spire is a dormer of very slender form, and on each squinch-cover is a fairy spire-crowned castle-in-the-air, forming a pinnacle. The spire itself has angle beads, scale carving (frequently in bands alternately plain and scaly), and in some cases cusped openings (St. Pierre at Caen). Tower and spire are more abruptly separated than in the Ile de France, while the lofty square belfry differs entirely from the Type III. composition, with its two windows in the square tower's upper story and single central window in the octagonal stage—a composition which forms such a prominent feature at St. Albin, Angers, and Chartres south-west steeple. St. Pierre at Caen brings the Caen type to the fourteenth century. It has a parapet with angle pinnacles in addition to the usual pinnacles on its squinch-covers. Norrey, Bernières, and Ducy are all good examples of spires erected in the Caen district.

The fine western spires of Coutances Cathedral show a mingling of Norman and Ile de France traditions: their stair turrets are unusually prominent.

Square spires were also sometimes built in Normandy with Gothic detail. St. Loup, Bayeux, is an early specimen, while Allemagne has detail like that of the Caen spires. In Northern France are no spire lights like those of Northamptonshire, nor are squinch-covers (except the form in fig. 2) architecturally emphasised. The Norman spires have always been much admired in Britain. St. Pierre at Caen, according to Fergusson, "unites all the properties of a good design without either poverty or extravagance"; but Viollet-le-Duc's opinion is as follows:—

"Le domaine royal est la véritable patrie des flèches: La Normandie a élevé, pendant le XIII siècle, un grand mbre de flèches qui existent encore, grâce à la bonté des matériaux de cette province; mais ces conceptions sont

* For a definition of "squinch-cover" see page 630.

loin de valoir celles de l'Ile de France. Les flèches des églises de l'Abbaye-aux-hommes de Caen, des cathédrales de Coutances et de Bayeux ne nous présentent pas une entente parfaite des détails avec l'ensemble; leurs pinnacles sont mesquins, confus, couverts de membres trop petits pour la place qu'ils occupent; les silhouettes sont molles, indécises, et n'ont jamais cette mâle énergie qui nous charme dans les contours des flèches de Chartres, de Saint-Denis, de Senlis, de Vernouillet, et d'Etampes."

In Brittany spires are of a somewhat mixed character, chiefly Northern in feeling. They are often late in date, and constructed of open tracery work.

Burgundy has few important spires: the earliest show strong German and Lombardic influence; the latter are more French. The steeple of St. Pierre at Vézelay, with corner shafts supporting angels whose wings are outstretched against the sides of the tower, and an unusual treatment of string-courses, shows what Burgundians could do in the spire-building epoch; but the influence of the Cistercian Order was supreme in the church of Burgundy, and, to the Cistercian, steeples were strictly forbidden.

SPIRES AND BELFRY STAGES IN FRANCE AFTER THE FINAL ESTABLISHMENT OF FRENCH INDEPENDENCE.

From 1340 to 1450 France built few spires, for during that period France was struggling for its very existence as a nation, and funds were needed for more urgent matters than steeple building. When at last the cause for which Joan of Arc had given her life had been successfully finished by "a meaner and more astute patriot, Louis XI.," and France was, for the first time, a free and united nation, foreign art had to repay some of its debt to France before *French* national art again became possible. It is on record that Joan of Arc's sacred banner was painted by a Scottish artist, and the joint influence of England and North-Eastern Europe (where the Flemings had arrived at a high degree of artistic perfection) is apparent in early "flamboyant" architecture. The finest flamboyant spire—perhaps the best Late Gothic spire in Europe—is that (371 feet high) which was erected on the north-west tower of Chartres Cathedral early in the sixteenth century. It is of Type III., with two octagonal stages, of which the upper is set diagonally. The various changes of plan are skilfully managed: the eye is led from belfry to spire by a series of graceful pinnacles and flying buttresses, and the stair turret is boldly carried up and made a feature of the design. This spire is covered with scale ornament, but others of the late French spires are of open tracery work, evidently derived from Germany or Flanders, but treated with a grace never attained in North-Eastern Europe. Few of the late French spires are of large dimensions. The south-west spire of Notre Dame de l'Epine is well known and deservedly admired. The church of St. Laurent, at Rouen, has an incomplete steeple which was intended to have a slender spire or central pinnacle. The lower part of this steeple is very simple and the concentration of ornament at the summit is most admirably managed.

Spire design in France was still alive and progressing, though with less strength than in its earlier days, when the Classic revival rose and spread over the face of Europe, blotting out from decoration, though not from construction, the painfully attained results of six hundred years of architectural tradition. In France, Renaissance architecture grew into a great and living style, but its influence on spires was fatal: they simply ceased to be built until the Gothic revival of last century. The Gothic revival reached France (like the flamboyant style) from Britain and Germany, but was carried out by native architects and with less success than in Britain. Modern French spires seem to us too prickly, hard, and suggestive of cast-iron work. Of course, this may be a matter of training and prejudice; once, at Rouen, I heard a "Philistine" admire the modern west front of St. Ouen more than any of the ancient buildings in that city. That was an honest Philistine, what he said doubtless many others think.

Spires in France tended to become small in proportion to their belfry stages in late mediæval work; as a rule they are not of such steep pitch as English spires. While less amateurish than some English spires and more elegant than those of North-Eastern Europe, many French spires show too much conscious striving after originality and splendour of effect; in restraint and pleasant simplicity they are excelled by those of England, where architects have nearly always been disposed to say: *Parce, puer, stimulis, et fortius utere loris.**

SPIRES AND BELFRY STAGES IN GREAT BRITAIN AND IRELAND.

British spires are of special interest, not only because several types were developed here which appeal to us as representing the ideals and preferences of our own countrymen, but also because the spire idea has enjoyed a longer uninterrupted popularity in this than in any other country of Europe. It is also a country whose inhabitants have a great love for bells. The English, as is well known, invented in the seventeenth century a new method of bell-ringing (swinging the bells mouth upwards) and a new form of bell music (change-ringing), unknown in the rest of Europe and only introduced in modern times into Scotland, Ireland, and the British Colonies.

SPIRES AND BELFRY STAGES IN ENGLAND.

Of English belfry stages there is an infinite variety. Some have one (Ewerby), two (Newcastle), or three (Kettering) large two-light windows with traceried heads; Adderbury and St. Mary's, Oxford, have three-light windows. Some have two or more single-light windows, not very deeply recessed (Leighton Buzzard, Patrington, Witney, Bloxham). Some have boldly projecting buttresses, some pilaster buttresses; others again have no buttresses at all. At King's Cliffe, Northants, spire and belfry stage are combined in a very effective way. The early examples please by their simplicity and good detail; the late by their elegance and by the greater completeness of their architectural composition. Of the latter, Coventry could hardly be improved upon. Though many late towers have large windows in their lowest stories yet they avoid top-heaviness by wider spacing of the mullions in their upper windows and by judicious use of panelling. Very few indeed (even where tower and spire differ in date and style) are out of scale or in any way clash with the spires which surmount them or the churches to which they are attached.

If we may believe the evidence of ancient manuscripts, no Anglo-Saxon or Anglo-Norman bell tower was intended to have a flat roof; their roofs were pyramidal, sometimes acutely so, and had finials in the shape of angels (as at Canterbury Cathedral, where the central tower retained the name of "Angel Tower" even after it had been rebuilt in its present form), figures of saints, or elaborate vanes—[for a tenth-century description of a weathercock, see page 625]. But these roofs were, for the most part, of timber ornamented with gilt and coloured metal work. No stone spire can be said certainly to exist in Britain of earlier date than 1200.

As might be expected, the earliest stone spires are found in districts where good freestone was available and where architecture was in a flourishing and progressive state, readily absorbing new ideas from abroad and adapting them to local requirements of taste and workmanship.

On page 616 will be found a system of spire classification suited to all countries, and it will be noticed that most British spires belong to what is there called Type II. Of Type I. there are a few specimens, such as Stanwick, but none of much importance. Those of

* Some French spires show a form of construction unknown elsewhere: instead of the inside line of the belfry wall being carried straight up to meet the underside of the spire, a level space is left on the wall-head inside the spire; *e.g.*, the Trinity spire at Vendôme, St. Denis, where a colonnade continues the inside line of wall; Langrune, where there are internal buttresses; and St. Pierre at Caen. [See fig. 28.]

Type II. vary much in detail, but may for convenience be divided into three classes, namely, the Oxonian class; the Northampton class, or spires with numerous gableted spire lights; and those spires with neither dormer windows nor gableted spire lights.

The Oxonian type is first seen in the central tower of Christchurch Cathedral, Oxford (*c.* 1220). Here there are four pinnacles of peculiar form, placed over the angles of the tower, and between them rises a spire of rather low pitch, having angle beads and no spire lights except four large dormer windows immediately above the tower wall-head. These windows have double tracery and the spire is soundly constructed. The belfry stage of this steeple is well composed. It has the angle turret buttresses characteristic of such thirteenth-century belfry stages as West Walton, Sutton St. Mary, and Lincoln Cathedral, but here they are circular in plan, which is unusual.

At St. Mary's Church, Witney, is a spire [figs. 16 and 17] evidently of similar date to Christchurch, but of better construction and more finished design, though with a plainer belfry stage, which has buttresses only for a third of its height. At Witney the angle pinnacles stand on weathered pedestals (in a rather French manner) and do not have the "stuck-into-a-pin-cushion" appearance of those at, for example, Desborough or Wollaston. The pitch or angle of the spire is more acute than that of Christchurch spire, and therefore more pleasing to British eyes; and the squinch corbels are more logical and sound in construction than the squinch arches of Christchurch. The Oxonian type of spire seems to have been introduced from Normandy, and it never became so common here as the other British types of spire; yet it excels them in beauty of composition and is probably the form Ruskin had in mind when he wrote that: "As the pinnacles are not enough without the spire, so neither the spire without the pinnacles." Its infrequent use of large projecting buttresses and the unity given by its single dormers are also in accordance with his ideals. The spires of Chichester (central), Salisbury (central), Peterborough (south-west), and Truro (central) Cathedrals are all Oxonian, not by direct influence so much as because their designers were more open to outside ideas and less indebted to tradition than the builders of ordinary parish churches. At Salisbury (400 feet high and the grandest spire in England) the introduction of numerous string-courses and the reduced dominance of the dormers show a variation from the type; while at Truro (modern) there is a certain Frenchness of detail.

A certain kind of spire having once become popular in any district, it persists ever after, owing to the conservatism of local tradition, or would do so if tradition were the only guiding force in architecture. And so the idea of angle pinnacles and larger dormer windows persisted in Oxfordshire till the triumph of the Renaissance, when spire-building suffered a temporary eclipse and its tradition was broken.

St. Mary's steeple at Oxford shows the Oxonian spire in the fourteenth century and at its best artistically, though not constructionally. The defect of pinnacled spires lies in the fact that when viewed diagonally the composition loses compactness and the spire appears too slender for its tower. At St. Mary's—and at the contemporary Salisbury spire—a large pinnacle is placed in the void behind each angle or wall pinnacle, resting on the squinch-cover or (as at St. Mary's, where the squinch-cover is flat pavement) on the side of the spire. Such inner pinnacles are, for the sake of the general outline, always larger than the wall angle pinnacles. If supported on the apices of the squinch arches they tend to increase the thrusts of those arches, and if placed on squinch corbels they threaten to crush in the sides of the spire. Nevertheless, their use, as "constructed decoration," may be said to be justified by their excellent effect on the whole composition. The pinnacles at St. Mary's are well disposed, and an open tracery parapet below the pinnacles ties the whole together and effectively divides the spire from the earlier and plainer belfry stage. As usual in Oxonian spires, the absence of upper spire lights leads to a concentration of enrichment at the base of the spire, pre-

venting that "all-overish" effect seen in some rich spires of the other types. The inner pinnacles have arches beneath them to permit of passage round the parapet walk, and a door leads through one of them into the spire's interior [fig. 21]. These openings are inconspicuous, but at Peterborough similar arches are made prominent features of the design.

At Shrewsbury are two interesting "Oxonian" spires. St. Mary's is a well-proportioned example of the type, and St. Alkmund's resembles it, but without a parapet and without pinnacles, its dormer window treatment, however, placing it in this class.

North of Oxford a group of spires takes the local type to the end of the fifteenth century:—

"Adderbury for strength;
Bloxham for length;
King's Sutton for beauty,"

as a local rhyme says, and with them may be included Middleton Cheney. Adderbury, a simple and severe design of the fourteenth century, has only four pinnacles, and they are placed on the squinch-covers. It has a good outline, and an open-work parapet of trefoils is used with good effect. The belfry buttresses are, perhaps, rather slender compared with those in the lower part of the tower. Bloxham will be referred to under Type III. (page 609), but its dormers are Oxonian, and its belfry buttresses stop short like those of Witney. Middleton Cheney has eight pinnacles, of which the four on the squinch-covers are joined to the spire by straight stone struts. It possesses a fine feature in its lofty panelled parapet, but the spire is not a complement of the tower, which would look quite well without it. King's Sutton is a well-known and very elegant spire; it is, indeed, "beautiful," and has a feminine grace which is quite charming. The spire has a tracery garland, and its angle beads are carved with simple foliage, which swells out into crockets at perhaps rather too infrequent intervals. The four outer pinnacles are connected to the four inner ones, and these to the spire, by stone struts with tracery under. All the pinnacles are square, but those on the tower angles are set diagonally to carry up the lines of the belfry buttresses. The belfry stage is well-proportioned but rather lean—in fact, to produce an ideally elegant steeple the spire of King's Sutton should be placed on the belfry stage of Oundle.

It may be noted that Oxonian spires—of which the above are the most interesting examples—have nearly always angle beads or rolls, have frequently one or more string-courses and garlands, and do not emphasise their squinch-covers architecturally: in which respects they follow the spires of Northern France.

Contemporaneously with the erection of the first Oxonian spires an entirely different type came into existence in Northamptonshire and Lincolnshire; a type whose chief decoration consists in prominent semi-pyramidal squinch-covers and numerous tiers of gabled spire lights. This kind of spire is sometimes known as the "Northamptonshire broach," the word "broach"—meaning spire—having remained in use in that district longer than elsewhere. It is also called the "broach spire," which (as was pointed out in the Architectural Publication Society's Dictionary) is a tautology. The oldest "Northamptonshire" spires seem to be in Lincolnshire; for example, at North Raunceby, where the lowest spire lights are much larger proportionately to the upper ones than in later spires and have somewhat "transitional" detail. North Raunceby has no angle beads, pinnacles, or string-courses, in which respect it differs from the Oxonian type. Angle beads were soon introduced, and enrichment was sought by the use of carved knots at the apices of the squinch-covers and at the feet of the angle beads; sometimes (*e.g.* Ketton) niches or buttresses topped the squinch-covers, and finials, carved heads, &c., were lavished on the spire-lights. The squinch-covers are occasionally of "timber," or "plain weathered," form (*e.g.* Etton), but are usually semi-pyramidal, and, for the most part, of steep pitch, as indeed they should be in the absence of pinnacles and parapets.

In Northamptonshire, spires with dripping eaves were built even at a late date, sometimes (*e.g.* Brampton) a band of panels being placed under the eaves so as to suggest a parapet.

At first two or three tiers or rows of spire lights were used, the top and bottom rows having lights on the spire's four cardinal faces, while the four lights of the intermediate row were placed in the diagonal faces (*e.g.* North Luffenham); but in the more lofty later spires four rows (*e.g.* Newark) are found, and sometimes all the lights are in the cardinal faces (*e.g.* Frampton). Grantham spire has eight lights in each of its two uppermost rows, but this mistake was generally avoided.

After parapets became usual on church roofs they were used for tower roofs also, and though reluctantly adopted in Northamptonshire itself, they early attained an established position in Lincolnshire and Nottinghamshire. At Holbeach and Bingham the parapets lack pinnacles, but in the steeples of Heckington, Newark, and Grantham pinnacles are used in excellent combination with the belfry buttresses. The spaces behind the pinnacles (see page 606) are in these cases filled by the lofty squinch-covers, but in order to provide passage-way round the parapet it was necessary to pierce the squinch-covers or the pinnacles by picturesque but troublesome archways. The final solution arrived at in this class of spires was to suppress the squinch-covers and join the pinnacles to the spire by stone struts or "flying buttresses," the usual characteristics of the Northamptonshire class being still retained—except at Louth, where there is only one row of spire lights. Of these strutted, pinnacled spires, Moulton is the most beautiful. Its struts are gracefully curved, and, while not pretending to have much to do, they serve a useful purpose by stiffening the pinnacles. At Billingborough the struts are too light, while at Higham Ferrers they are too heavy. Louth (300 feet high), built in 1515, is to this class what King's Sutton is to the Oxonian type, and St. Michael's, Coventry, to Type III. in England. Its pinnacles are unusually large, while its struts are of open tracery work, bulky yet light; moreover, it surmounts a very fine belfry stage.

Lichfield Cathedral's three spires belong to the Northamptonshire type, but are treated with extraordinary elaboration, pinnacles, spire lights and numerous string-courses being all much enriched: the decoration is, in fact, rather overdone.

Before leaving the above type mention must be made of a group of spires having crenellated turrets instead of pinnacles. These turrets are placed either on the squinch-covers (*e.g.* Leverington) or on the tower angles (*e.g.* Kettering, Oundle, and Byfleet). Kettering's turrets have loopholes which are splayed internally, so as to be quite efficient from the military point of view.

The "Northamptonshire" type seems to have been evolved in this country without external assistance. It is more straightforward but less cultured than the Oxonian type, and is frankly an ornate tower roof, not (except in late specimens) a piece of monumental architecture. In its simplest form it is admirably suited to small rural churches and to belfry stages with pilaster buttresses; but at Ketton it looks rather overdressed, and if it have corbelled eaves and no buttresses (as at a Congregational church in Lincoln) it looks top-heavy, especially if the line of spire slope comes beyond the line of wall, instead of finishing as at Leckhampton. In its latest form, as at Moulton, it can be made rich and elaborate without risk of artistic failure.

Somewhat later than the two former types, in fact not till after the general use of parapets, a form of spire arose differing from both of them. This, which may be called the "plain octagonal" spire—of which Bridgwater, Solihull, Norwich, and Fenny Compton [fig. 34] are varied but characteristic examples—shows an octagonal spire rising, without visible squinch-covers, above a parapet with or without pinnacles. It is sometimes found on a simple kind of belfry with no buttresses and a projecting stair turret at one angle, but

it is also used for some of our most elaborate steeples. In this variety of spire, dormers and gabled spire lights are absent, and are replaced by string-courses and plate tracery, as at Solihull and Stoke Golding, or panelling and small buttresses, *e.g.* Norwich Cathedral and St. Michael's, Coventry. Norwich and Patrington are the most important of the class: the former is noted for its curious buttresses and its frank disconnection from its tower; the latter is a plain spire surrounded at its base by a graceful corona of open arcading, having fifteenth-century detail. In this it is unique among English spires, but the central spire of St. Lazare's Cathedral at Autun has a similar feature of equal elegance. The angle pinnacles of Patrington are very peculiar. They stand astride the parapet walk and are joined to the spire by struts. Coventry would be in this class did not its octagonal intermediate stage place it in Type III.

There remain for consideration spires of Type III. (page 616). (Steeples will be found on page 618; flying spires, page 619; chancel-arch steeples, page 621.) This French form seems to have been alien to British mediæval ideas, although one of our most ancient spires belongs to it, viz. Barnack, where a late twelfth-century belfry stage and spire surmount a Saxon tower. Barnack spire is of low pitch and less than half the total height of the steeple, but these rather Continental proportions are well suited to this particular case. Thirteenth-century examples are few, but the fourteenth-century has several, of which the finest is Bloxham [fig. 23], a steeple which must be seen in order to be properly appreciated, as drawings do not justly represent its effect (owing to the apparent weak points where the square becomes an octagon). Notable features at Bloxham are the large crockets, of which there are only two tiers (the whole height may have been intended to be crocketed originally), and the extremely rich cornice of the belfry stage, supporting a parapet which more nearly resembles French flamboyant work than any other in this country. Only the upper half of the belfry stage is octagonal, and the pinnacles are small. In fact, small pinnacles are an English feature in this kind of steeple, as is also the substitution of square for octagonal pinnacles (*e.g.* Wilby) and the use of slender buttresses (*e.g.* All Saints', York). Wilby is a pretty little steeple, well-proportioned, and of pleasing outline. Several good simple spires of this class are illustrated by Wickes. All Saints' Church, North Street, York, has a slender spire (120 feet high) of late Gothic style [fig. 31] whose special excellence lies in its unassuming simplicity and good profile—qualities that stand it in good stead now that it is surrounded by a very depressing environment. Here, as also in the central lantern of Wymondham, two octagonal stages are present and buttresses rise from the squinch-covers. This steeple and that of St. Mary's, Castlegate, York, are more influenced by the lanterns of some other York churches and Boston "Stump" than by the Continental forms of Type III. St. Michael's, Coventry, built in 1432, shows the latest development of Type III. in England: its tower is of the same composition as Boston "Stump" (which was probably also intended to have a spire), but is more elegant; its angle pinnacles are joined to the base of the spire by ogee-shaped struts (as in the Rouen lanterns), short lengths of buttress ornament part of the spire's height, and the whole steeple is freely enriched with panelling. Some lack of constructional fitness there is in its details, and even some lack of freshness in its ornament, yet it is generally acknowledged to be one of our best spires, and few, if any, modern examples, in its style, have surpassed it. St. Michael's steeple is a fitting finial to English mediæval spire design, and a standing refutation of the theory that *all* "Perpendicular" Gothic is bad. *Some* of it, no doubt, is bad and decadent enough.

The general use of flat roofs on churches led to their toleration on towers, so that, although more belfries were built in the fifteenth and sixteenth centuries than ever before in England, the majority are spireless.

NOTE.—English mediæval spires are seldom less than half the combined height of tower

and spire. Except a few early examples, their angles vary from 83.5° to 85°; the latter pitch is quite common in English work.*

MEDIÆVAL SPIRES AND BELFRY STAGES IN SCOTLAND.

In Scotland no stone spires are found till the fifteenth century, because before that period "wealth, peace, leisure, culture, and national entity" were not simultaneously present, and without their united presence no nation ever indulges in the extravagance of stone spire building. The oldest stone spire in Scotland is that of Glasgow Cathedral. The timber spire there having been destroyed by lightning in 1400, its belfry stage was heightened in 1410 and a stone spire, 219 feet high, built before 1430. The arrangement and number of its spire lights (which have ogee-shaped gablets) and the size of its squinch-covers (which have pinnacles on their apices) place it in the "Northamptonshire" class. A peculiar local character is given to the design by the way in which the two principal string-courses or cornices, which encircle the spire, are treated. The lowest carries a pierced parapet—vertical, not sloping as in the English garlands—with pinnacles at its angles; the upper is similar but of smaller dimensions. [Similar parapets or galleries are found at Burgos and Batalha; and the architecture of the Spanish Peninsula was admired in Scotland, judging from the words of the poet, James Dunbar:—"Farewell, Lithgow, whose palace of pleasance, Might model be in *Portingall* or France."] The present rather truncated finial dates from the end of the eighteenth century, when the spire (after damage by lightning) was restored by Mungo Nasmyth, a local mason.

The so-called "Fifeshire" spires are all founded on that of Glasgow; their notched or battlemented strings (which sometimes carry balustrades in seventeenth-century examples) and numerous small spire lights sufficiently attest their origin. St. Salvator's Collegiate Church at St. Andrews, and St. Monan's parish church [fig. 24], both built after 1460, seem to be the oldest spires in Fifeshire; Brechin Cathedral, Forfarshire (north-west steeple), may be as old or older. These spires are always separated from their belfry stages by parapets (or balustrades in the seventeenth century), and have frequently squinch-covers of the "timber" form. They continued popular till a late date; *e.g.* Dunfermline 1584, Pittenweem 1588, and St. Michael's, Cupar Fife, 1620. Characteristically Scottish are the spires, 111 feet high, erected in 1530 for Bishop Gavin Dunbar, by Alexander Galloway, on the western towers of Aberdeen Cathedral. These have battlemented strings with small angle pinnacles, and square belfry stages, designed with the spires, separate the spires proper from the heavily parapeted towers of *c.* 1440. They show little Continental influence, though Galloway spent part of his life in Flanders, and, apart from that, the constant trade between Eastern Scotland and the Low Countries might have been expected to cause the appearance of foreign detail in the eastern counties. The incomplete spire of Seton Collegiate Church (*c.* 1510) is unique in Scotland in possessing neither parapet nor pinnacles (Corstorphine has no parapet but has pinnacles: the rest have parapets, though pinnacles are rare). It has "timber" form squinch-covers and no spire lights.

The typical Scottish belfry stage has no buttresses, but its corners may be moulded or chamfered. It is crowned by a parapet which, unlike the later English parapets (except

* As showing the important place occupied by steeples in the life of mediæval England, the following contemporary account of the popular rejoicings at the completion of Louth spire may be of interest:—"The 15th Sunday after Holy Trinity of this year (1515) the weathercock was set upon the broach of Holy Rood Eve after, there being William Ayleby, parish priest, with many of his brethren priests, there present, hallowing the said weathercock and the stone that it stands upon, and so conveyed upon the said broach; and then the said priests singing *Te Deum Laudamus* with organs, and the kirk-wardens garred ring all the bells, and caused all the people there being to have bread and ale, and all (to) the loving of God, our Lady, and all Saints." The entry occurs twice in the building accounts; the other entry is given on page 625.

Wakefield, Yorkshire), is projected on a corbel table or heavy cornice beyond the line of wall below; and its sides are pierced by two or more simple windows having sometimes tracery in their heads and, in some cases, traceried transoms. In St. Giles' steeple, Edinburgh, the belfry window mouldings are of less extended plan towards the centre line of the tower than towards the angles, so that the windows may be closer together than if the outer mouldings were used throughout. It is the same motive as that of the tower at Abbeville, described in Ruskin's *Seven Lamps*.

The old Merchants' House steeple, Glasgow (164 feet high), designed by Sir William Bruce, the architect of Holyrood Palace, in 1651, is intended to be "Gothic," and is the only spire-bearing Scottish specimen of a composition sometimes used abroad (*e.g.*, the belfry of Ghent and the south-west tower of Bâle Cathedral), wherein the tower's upper stories recede somewhat telescopically; its stone spire is surmounted by an unusually large pommel and a ship vane. [For Scottish "crown" spires, see page 619.]

After the Parliamentary union with England, Scottish spires followed English fashions, though with some local character, and will be noted in this essay along with their English contemporaries.

In Wales spires are few and of no particular importance.

Distressful Ireland in the Middle Ages had never wealth, peace, leisure, culture, and national entity, all at the same time. Moreover, good freestone was lacking in many districts. In short, there are no mediæval spires in Ireland, unless a few, of small interest, in the "English Pale." Conical spires surmount some of the Irish round towers, but these were not belfry stages in the ordinary sense of the word, and in any case none of them need further notice here.

SPIRES AND BELFRY STAGES IN THE UNITED KINGDOM SINCE THE REFORMATION.

From 1550 to 1660 practically no spires and few belfries were built in England; partly because Church politics were disturbed, partly because England was already well supplied with steeples, and partly because the Church had been superseded by the aristocracy as chief patron of architecture, and Elizabethan and Jacobean nobles were selfish and preferred to erect houses for themselves and their posterity rather than churches or other buildings for the commonweal. But the British people still admired spires, so those already existing were preserved and restored when damaged by lightning or tempest: for example, St. Margaret's, Stoke Golding, was repaired in 1589; Louth in 1627 and again in 1635; Lichfield central spire was rebuilt in 1661; King's College, Aberdeen [fig. 25] in 1634; St. Giles, Edinburgh, in 1648. In fact in Scotland new spires were built till the pecuniary and political troubles of the early eighteenth century put a temporary stop to their erection. [The seventeenth-century Scottish attitude towards spires may be illustrated by a quotation from Glasgow's Burgh Records, 27th January 1630:—"The bailleis and counsall all in ane voice hes thocht it meit and hes condischendit as ane commoun weil of the said burgh that the stiple of the Trongait Kirk sall be hightet in the most best and commodious forme can be divysit be the best craftismen, with all diligence possible." The present Tron spire (126 feet high) dates from that heightening.]

The Great Fire of London (1666) enabled Sir Christopher Wren to restart British spire tradition on a new line of progress with an impetus not entirely lost at the beginning of last century. What happened after the fire may be explained thus:—All know how conservative children are towards anything having old associations: if his nursery mantelpiece ornaments are "spring-cleaned" the child will not be happy till each resumes the *exact* place it previously occupied. Something of the same sentiment actuated the churchwardens and

parishioners of London. Their churches were to be rebuilt on the old sites, on the old foundations, and to resemble the old buildings. In the nineteenth century, architects could have been found able and willing to restore each church exactly as it stood before, but the seventeenth-century Londoners had to deal with the practical and unsentimental Wren. Their loss is our gain, for assuredly "to do what has been done before is to do nothing" (Giraldus Cambrensis), and London's City churches are a priceless possession. In one matter Wren yielded to popular taste—he designed bell towers for each church, of similar bulk to those which had been ruined. Wren's "steeples" are described on page 619. Of pure spires he erected few in stone. Fig. 27 shows the now destroyed spire of St. Antholin's, Budge Row (1682)—a good specimen of Wren's picturesque and original detail.

Gibbs, Hawksmoor, and Flitcroft continued the Wren steeple tradition, and, while not using the St. Antholin type, they developed Wren's obelisk form (as shown in St. Vedast Foster Church) into a real spire, such as that of St.-Martin's-in-the-Fields (1726), which represents Renaissance spire design at its best, though according to Gwilt it is, "as in all English churches of the Italian style, a sad blemish; but the taste of the day compelled their use, and we regret that the clergy still (1842) persist in considering them requisites" (!) Christ Church, Spitalfields, by Hawksmoor, is almost Gothic in composition, and, like St.-Giles-in-the-Fields (1733), by Flitcroft, is an excellent piece of steeple design.

In the eighteenth century, spire symbolism appeared and Pope could praise the man who "taught the heaven-directed spire to rise." The "Romantic" poets were still more emphatically appreciative of spires—in fact spires became desired adjuncts to all new *parish* churches. [Dissenting chapels had no spires or bells till the nineteenth century, when the Scottish "Free" Church claimed the right to use them after the "Disruption," and the English Nonconformists began to relax their sternly Cistercian ideals of architecture. A story told about the spire in fig. 35 illustrates this: An enthusiastic dissenting lady had asked the parish minister to guess what was the height of her church's new spire, "I think," he replied, "it is the height of presumption."] So as the eighteenth century drew to its close, spires increased in number and in height relative to their towers, from which they were usually separated by more than one intermediate stage. Many are graceful, refined, and pure in detail. They abound in Scotland, where nearly every country town has one or two on church or municipal buildings. Fig. 30 shows one added to the church of Markinch in 1807 and constructed on a square dome, like some early Etruscan structures. Fig. 22 shows that of a small country church in Stirlingshire. It exemplifies in its simplest form the arrangement of parts obtaining in all steeples of this type and period.

Unfortunately, British architecture had, under Classic influence, become over-refined and anæmic; in fact, the Renaissance spire tradition lost most of its former life and energy ere the commencement of the Victorian era.

Coming now to the Victorian era, it is apparent that the spire idea, having survived all the attacks of pedantic classicism, though in a somewhat emaciated condition (literally emaciated to suit early nineteenth-century "elegance"), was only waiting for some new life in British architecture in order to revive its former glories. It had not long to wait ere

> "A breeze through all the garden swept,
> A fuller light illumined all."

Under the influence of the Gothic revivalists, and of ever-increasing commercial prosperity, church building entered on a new phase from the architectural point of view. Simultaneously with this a great awakening occurred in the religious consciousness of the country, and a spire-building epoch followed well able to withstand comparison with those of past ages.

The "Gothic revival" still awaits another Fergusson to chronicle and dissect impartially its causes, effects, defects, and virtues, but it may be noted here that the revival was not "Gothic" in spirit, for, save in the work of a small minority, it was imitative of the works of former times. That is the spirit of "classicism"; the spirit of our mediæval and truly Gothic predecessors was *progress*—not the anarchic progress of the "new art" or "free treatment" enthusiast, but a steady, united movement, ever striving to meet current needs in an up-to-date way. "As general characteristics, we may say that Gothic architecture was developed by free and energetic experiments; it was organic, daring, reasonable and gay: the measure of life is the measure of Gothic" (Lethaby).

"Art is a long story, but its chapters are short," and the Gothic revival's triumph was brief. Nevertheless it justified itself by its works, and these include many excellent belfry stages and spires of stone or brick. It would be easy to find bad modern spires and expose their weaknesses, but, as was said by Mr. T. G. Jackson, "More is learnt by the critical examination of one good building than by the most ruthless analysis of a dozen bad ones." So those spires built before 1850 may be passed over, for, though often archæologically good and sometimes interesting as endeavours after novelty (with the help of German gable motives), they throw little new light on the subject of spire design.

Fig. 35 is a spire by the late J. Hay, of Liverpool, dating from "the 'fifties," interesting as an attempt to decorate construction logically. From this point of view it is almost perfect, its only unnecessary detail being the corbel table which occurs on the horizontal parts of the wall-head. The squinch-covers exactly express their construction (see page 623), and in a way never before attempted; the necessary stair turret is architecturally treated, but not over-emphasised; the spire lights are sufficient for ventilation, but are not obtrusive; and the buttresses are placed at the two angles which do not touch the church and which, therefore, require spreading foundations to prevent the steeple dragging away from the main building [see also fig. 34]—a point forgotten by Ruskin in his comparison of the great campanile of Venice with the stair turrets of Edinburgh U. F. Church College (in his *Stones of Venice*).

Glasgow, "the second city of the Empire," situated in a freestone district and possessing the oldest stone spire in Scotland, might be expected to show good modern steeples; and undoubtedly some of the finest spires of the Gothic revival were erected there. Fig. 29 indicates the spire of Lansdowne U. F. Church, Glasgow, one of the earliest works of J. Honeyman, Esq., LL.D., R.S.A. It was erected in 1862 and is 220 feet in total height. If not the best, it is one of the best modern specimens of the English system of proportions: that is to say, a slender spire placed on a tower not higher than itself. The junction of tower and spire is most ingeniously treated with a small open arcade, the cope of which binds together the pinnacles and dormers (for this spire is of the "Oxonian" type). A minor detail thoughtfully treated is the pair of garlands, which, instead of being traceried in the later Oxonian manner (this spire having early detail), are formed of lattice diaper, like that found in the parts of Lincoln Cathedral erected for Bishop Grosseteste.

In London's suburbs are many excellent spires, built in the 'fifties and 'sixties, whose only fault is their lack of originality; some are built of brick with stone dressings, and one at least (in Hammersmith) has flint rubble with stone dressings—this latter an idea worth noting.

In the 'sixties and 'seventies a strong French Gothic influence spread over British architecture, and particularly church architecture, chiefly owing to the discovery by British architects of how excellent French Gothic was in many ways. At this time some good spires were erected which exhibit a picturesque blending of English and French ideas (*e.g.* the south-west spire of Llandaff Cathedral, by J. Pritchard); as also some more purely Gallic, like the central spire of St. Mary's Anglican Cathedral in Edinburgh, by the late Sir G. G. Scott, R.A.; and some designed by the late G. E. Street, R.A.

Fig. 32 shows a spire designed by the late J. L. Pearson, R.A., for a church at Croydon. Its composition is singularly happy and quite English in feeling, though with some French detail. This spire is suitable for construction in either stone, brick, or timber, with angle pinnacles of the same material.

Fig. 36 gives some idea of a spire (208 feet high) designed by J. J. Burnet, Esq., LL.D., A.R.S.A., for a public building in Glasgow. It is admirable as an attempt to use the spire form for such a purpose, and particularly notable in that the bells are ornamentally treated and made a feature of the design. Like the Continental carillons, they are not meant to be swung.

It will be noticed that most of these modern examples are by men who have been honoured by the universities with honorary degrees, or by their fellow-artists with membership in the English or Scottish Academies. It is not intended to infer that no good work has been done by those less recognised, but the work which has earned public approval is that which best illustrates the art of any period. Some remarks of Mr. Archer *re* "the theatrical situation" seem quite *à propos* to modern architecture:—"It is a grave misfortune for any 'artist' to get into the habit of despising popular taste and thinking he has only himself to please in his work. He is a barren and unresourceful 'architect' if he cannot satisfy his soul without making himself incomprehensible or displeasing to all but a narrow sect of sworn admirers." Or, as "judicious" Hooker put it, "the most certaine token of evident goodness is, if the generall perswasion of all men doe so account it."

At the present day a few English architects, such as Messrs. J. Oldrid Scott & Son, continue the best traditions of the Gothic revival. A few, like Dr. Burnet, have tried experiments which are "worth while"; but for the most part the very small number of stone or brick belfry stages and spires now being built in the United Kingdom are either uninteresting or merely *outré* and perversely ingenious. It is to be hoped, however, that this is merely a temporary lapse from our traditions as a steeple-building nation, caused rather by political and financial troubles than by lack of affection for one of the most monumental kinds of architectural composition.*

SPIRES AND BELFRY STAGES IN SOUTH-WESTERN EUROPE.

Italy.—In Italy, belfry stages or campanili were built from a very early period in the Christian era, and are the lineal descendants of the late Roman brick towers; but spires were only introduced, under Northern influence, in the thirteenth century. Italian mediæval spires and belfries are of very plain character. After the Renaissance greater richness was obtained by a free use of the "orders" on belfry stages, and of ribs and panels on spires. Cremona (1296) and Modena (*c.* 1300) have spires of pleasing proportions. St. Croce at Florence has a stone spire with German gables at its base and a corbelled-out gallery on the spire. Giotto's campanile at Florence was designed for a spire, but of timber, it is said. The Broletto at Monza possesses a brick spire of good outline. But Italian spires of all ages are seldom either of large dimensions or good design. After the Renaissance, stone was not often used for spires, but the well-known steeple at San Biagio, near Montepulciano, is a picturesque exception.

Dome or vault-supported central steeples in receding stages—such as Chiaravalle (1221), the Certosa at Pavia (*c.* 1400), and Milan (1440)—form Italy's only contribution to steeple development.

NOTE.—Spires in Italy are of moderately steep pitch, but are small in proportion to their towers. Belfry windows are plain through-arched openings, in which the bells frequently hang instead of on a bell carriage.

* Perhaps a revival of spire building will come when British religion has been purged of professionalism, and, by reconstitution on an amateur basis, rendered acceptable to the more thoughtful part of our population.

Spain and Portugal.—The early Romanesque architecture of Spain has no spires, though, like that of Southern France (which it closely resembles in many ways) tall central features and detached campanili were used with good effect. Although French Gothic was largely used in Spain in the thirteenth century (sometimes with very little regard to local climatic conditions), it was not till the fifteenth century, and under the influence of North-eastern Gothic, that Spain developed a national style of church architecture in which spires played a prominent part. These spires were almost always of the German open-work type and of German proportions, but with local peculiarities, of which the chief was the use of small parapets encircling the spires; *e.g.* Burgos and the small spire at Batalha. Another local peculiarity was the use of tracery-work entirely filling the windows; *e.g.* Batalha. After the Renaissance, steeples of very picturesque character were erected in Spain. Of these the Giralda at Seville is one of the earliest and best. Later examples have usually groups of columns at the angles of their belfry stages, with broken entablatures, and by means of diminishing stages lead up to a finial of spire or obelisk form. Modern spires in Spain are few and of no particular interest.

Provence.—In this district spires were unknown, or unappreciated, till after its forcible union with Northern France, and even then not till the fifteenth century. Picturesque campanili had been early introduced, and the late steeples show their influence in projecting galleries and through-arched belfry windows. The latter Southern feature is found even in steeples with such French Gothic detail as Ste. Marthe at Tarascon and Avignon Hôtel de Ville: the former are found on the cupola-crowned Renaissance bell-tower of St. Martin at Arles.

Auvergne.—Spires were not essential features in the curious but picturesque style which grew up among the hills of this isolated province. There is one important steeple at Le Puy en Velay, but it is so purely of the Limousin type that it will be referred to under Aquitaine.

Aquitaine and Anjou.—In these provinces steeples belong to two very dissimilar types. The first seems to have been developed in the district of Périgord. In it the spire is conical and entirely covered with inverted scales of fir-cone type. This is a more logical stone decoration than the tile patterns of the North, for the scales act as saddles, throwing rain-water away from the vertical joints in the stonework. These conical spires have all circular intermediate stages on square towers, and thus come into Type III. (p. 616). St. Front at Périgueux is an early and curious example. Notre Dame at Poitiers (Anjou) is shown in fig. 4, which explains the usual composition adopted. The Abbaye-des-Dames at Saintes is similar, but finer and with angle pinnacles. At Roulet, Charente, the cone has become very acute: it has no circular intermediate stage, and open pinnacles are used over the squinches. Its loftier proportions may be the result of evolution, but more probably were caused by the Northern influence which caused this type of spire to disappear in the twelfth century.

The second type is in two subdivisions. The first is a spire of Type I. (page 616), with curious ears at its angles. In its latest development these ears were truncated and finished with seated figures, while gables were introduced between each pair of ears. This kind of spire is found over a wide area, surmounting plain belfries of eleventh and twelfth century date; *e.g.* at St.-Martin-d'Ainay, in Lyons [fig. 6]. It also surmounts some of the curious steeples in the Limoges district.

These steeples are of considerable height, and their most notable features are: *(a)* their construction in a number of diminishing stories (like many of the Renaissance steeples); and *(b)* the use of gables or pediments below the top story's wall-head (this is said, by G. E. Street, to be a feature of German introduction; but it may be independent of external influence). At Brantôme (Dordogne) the reduced upper stages are carried by corbelling; at Le Puy en Velay (which diminishes from 36 feet square to 16 feet square) they are supported on an elaborate system of superimposed piers and vaults which carry their weight straight down to the

ground. According to Viollet-le-Duc, Le Puy exhibits better construction than Brantôme, but it is the Brantôme form which survives in sixteenth- and seventeenth-century steeples all over Europe. Fig. 3 shows a modified form of these receding belfries.

The second subdivision of this type in Western France is the result of building these Limousin steeples with spires of Types II. (*e.g.* Cormery and Cunault) and III., but especially of Type III. In this way the steeples of St. Leonard, Haute Vienne, with its octagon set diagonally; of Uzerches (Corrèze), and, finally, of the Trinity at Vendôme, came into existence, and by a mutual interchange of ideas between Anjou and the Ile de France these steeples became the forerunners of the south-west spire of Chartres Cathedral, and through it of the most important Type III. spires in Europe. But this spread of Type III. was the work of Frankish artists, for the Western provinces lost their architectural independence in the twelfth century.

Some good spires were subsequently built, *e.g.* St. Albin at Angers, but in the style of the Ile de France; and even the characteristic early spire lights [fig. 1] became extinct (unless those of Northamptonshire are their descendants).

The south-western province of France is not of so much interest architecturally as archæologically, and for the sake of the germs of possible styles which were there created, but had their careers cut short by the all-conquering "pointed arched Gothic" of the North.

CLASSIFICATION OF BELFRY STAGES.

Belfry stages may be divided into two main classes:—

I. Those whose windows, jambs, and arches have receding orders of masonry, and, when of more than one light, are divided by small shafts or tracery [figs. 2, 14, and 26]. This is the Northern type, and such windows do not have bells hung in them, the bells being hung in a carriage supported by intakes or corbels at the belfry floor level: whence is possible the light construction of many Northern belfries.

II. Those whose windows are through-arched without receding orders, and generally without subdivisions [figs. 6 and 36]. This is the Southern type, and frequently the bells are suspended in the windows—a mode of hanging not suited to large bells or change-ringing, unless the belfry walls are of great strength.

I. has usually buttresses associated with it; II. has them very seldom. When belfry stages of Type I. have no buttresses, their angles are sometimes moulded; *e.g.* Iona Cathedral, Scotland, and Wollaston Church, Northants, where plain beads are used, and St. Margaret's Church, Crick, Northants, where ball-flowers enrich the angle mouldings.

CLASSIFICATION OF SPIRES BY DESIGN.

Hitherto spires have been classified in a somewhat superficial manner, first used by Wickes and copied from him by subsequent writers, viz.: spires with parapets or balustrades, and spires with dripping eaves. The following is an attempt to outline a system founded on more fundamental distinctions, the presence or absence of parapets being a minor detail, dependent rather on fashion than on constructional necessity or æsthetic desirability. Spires, then, can be arranged in three main classes:—

I. Spires the same shape in plan as the belfry stages and towers whereon they stand—*e.g.* square on square or circle on circle, &c.

II. Spires of different shape in plan from the belfry stages whereon they stand—*e.g.* octagon on square, circle on octagon, &c.

III. Spires of Class II. separated from their belfry stages by stages of similar plan to their own—*e.g.* octagon on octagon on square, circle on circle on square, &c.

Each of these main classes is subdivisible into (*a*) spires with pinnacles, and (*b*) spires with no pinnacles, which may be again divided according as parapets are present or absent.

Spire lights, garlands, crockets, secondary pinnacles, flying buttresses, angle beads, and surface decorations may by their presence or absence afford further distinctions, so that one might, by stating that a spire is of Type I., $a\,2\,\phi\,x$, at once call to mind a particular form without further description. However, this, though not without a certain convenience, savours somewhat overmuch of classicism, and is in any case hardly necessary in this essay.

We may also distinguish IV., "spires which are not spires," in three subdivisions:—

(*a*) "Steeples," or, as Pugin calls them, "fanciful emotions."

(*b*) Spirelets on crossed arches, which Wickes called "flying spires."

(*c*) Small belfry stages and spires supported on the broad chancel arches of a few churches.

The great majority of steeples have spires of Classes II. and III., and it may be mentioned in passing that conical (circular in plan) spires are exceedingly rare. Probably the avoidance of conical spires and of spires of Class I. was due to some such feeling as is expressed by Diderot: "La pyramide est plus belle que le cône, qui est simple mais sans variété."

The form of squinch-cover * in Types II. and III. can hardly be considered a distinction of importance for classification. There were only two forms (apart from flat pavement), viz., the semi-pyramid, sometimes (but erroneously) called a "broach"; and the diminishing splay or "timber" form, similar to the stop of a stop-chamfer. It may be noted that there is no reason why only these forms should be used. Apart from the suggestions afforded by mediæval chamfer-stops, the use of such forms as that in fig. 15 is worthy of consideration.

TYPE I.

This type is found for the most part in early times and after the Renaissance. Most examples have no parapets, not because parapets are unsuitable, but because they were not in general use at an early period. The timber spires shown in Anglo-Saxon Manuscripts are often of this type, as also the Norman pyramids.

TYPE II.

This includes most of the English mediæval spires and many of those abroad. At first the transition from belfry stage to spire was marked only by the squinch-covers (which were sometimes surmounted by pinnacles), and both spire and squinch-covers had dripping eaves, either formed as a corbel table or as a moulded cornice. At a later date, when parapets had for various reasons, chiefly utilitarian, become popular, they were used for spires, rather improving the composition in most cases.

TYPE III.

This is *par excellence* the Continental, and especially the French, type. After its use in France in such examples as Chartres south-west spire it became increasingly popular. A few examples are found in England, of which the finest is, perhaps, Coventry. But on the Continent, especially in France and Germany, this type produced some of the finest steeples, one of the best of which is the spire at Brussels town hall; its composition is particularly happy, and the octagonal part is set diagonally on the square tower, with good results.

Note.—Where angle pinnacles adjoin, but do not touch, the octagonal stage in this type they may be connected to it by flying buttresses in three ways: by a flying buttress to the centre of the octagon's nearest side (which then has no window), by one flying buttress striking

* For a definition of "squinch-cover" see page 630.

the octagon above or below a window (*e.g.* Ste. Marthe, Tarascon, and the belfry of Bruges) and by two flying buttresses to the octagon's adjacent angles (*e.g.* St. Michael's, Coventry).

There is about Type III. a certain complexity, perhaps a greater intellectuality, appealing specially to mediæval Frenchmen and to modern architects of all nations, as compared with Type II., which lends itself rather to repose, dignity, and what has been called English gentlemanliness. Type III. is more clever, smart and interesting, but owing to the much greater weight above the squinches it is not so good constructionally, and, unless large and carefully proportioned pinnacles are placed on the squinch-covers—which are formed in exactly the same way as those of Type II.—the composition is apt to be unsatisfactory when viewed diagonally. With all its artistic dangers, this type has great possibilities, and the difficulties in the way but make it so much the more alluring by virtue of the skill required for its successful treatment.

TYPE IV. (*a*)—"STEEPLES," OR "FANCIFUL EMOTIONS."

Of this class Pugin says: "The consistency of their purpose as *coverings to the towers* being lost sight of, they become mere fanciful emotions, and cannot be defended on principle." This sentence seems to define such steeples uncommonly well. Although not to be defended on principle, they are worthy of study for their picturesqueness and general attractiveness to human nature, so prone to cry "the Grecian gluts me with its perfectness."

Steeples in receding stages had been built in Southern France at an early date, and their use was revived in the fifteenth century (*e.g.* at Antwerp), at a time when outline had been replaced by ornament as a point of chief importance in spire design. This type became one of the most popular after the Renaissance, not merely because it was the "latest fashion" of the Gothic art which the Renaissance had superseded, but because classicised architects saw in it a means of compromise between the public demand for steeples and the unfortunate fact that steeples were not to be found in the works of Vitruvius or even of Alberti. Without actually designing a *spire* it was yet possible, by superimposing a number of diminishing structures, temples, attics, &c., and finishing them with an obelisk, to produce something which the public could take for a spire; and the architect could still quiet his conscience by reflecting that it was nothing so Gothic. For example, James Gibbs, who was considered rather a Goth by the more Palladian Colin Campbell, wrote: "Steeples are indeed of a Gothic extraction, but they have their beauties when their parts are well-disposed, and when the plans of the several degrees and orders of which they are composed gradually diminish and pass from one form to another without confusion, and when every part has the appearance of a proper bearing."

The earliest fully developed post-Renaissance specimens of this kind of steeple were the two campanili which Sangallo designed for St. Peter's at Rome in 1536, and which were condemned as too Gothic by Michael Angelo, who said: "It was more like a work of the Teutons than of the good antique manner, or of the cheerful and beautiful modern style." They were excellent compositions of the kind, and, if Wren had access to drawings of them, may have influenced his work in London.

The early Renaissance steeples of the Continent resemble cupolas rather than spires, and with some exceptions (such as the north-west towers of Evreux and Gisors) are of wood, and therefore outside this essay. The later examples all come after the time of Wren, but few of them (save in Spain) equal his work, so it may be treated of with some fulness.

Wren was perhaps the only "genius" of the English Renaissance; certainly the "talent" of Inigo Jones, our other great man of that period, was of a different order. This is said without denying that Jones's buildings were as good architecturally as Wren's: they *were* as good (sometimes better), but they owed more of their goodness to the Italian masters than Wren's works ever did. Wren, though by training a classicist, was in spirit a Goth, and if he

had any conscientious convictions against spires, he did not let them trouble him; but his steeples, other than pure spires, are under consideration here. As already mentioned (page 612), Wren seems to have been instructed to reproduce the pre-Reformation steeples of those London churches rebuilt from his designs: how well he succeeded can be seen by comparing Van den Hoeye's view, taken 1630-40, before the Fire, with any similar view made in the eighteenth century. Some of these had no spires, and in such cases Wren's practice was to erect either a plain tower, a tower with a picturesque finial of lead-covered timber, or a stone steeple. St. Stephen's, Walbrook, and other small examples, charming in their quaint composition and bleached stonework, need no special notice. Two, however, must be more carefully analysed, viz. St. Mary-le-Bow and St. Bride's Church, Fleet Street. St. Bride's (1680), which strongly resembles Wren's "warrant" design for the central spire of St. Paul's, differs from almost all others of its kind in that the diminishing stories are of similar instead of varied design. It has sometimes been compared to a pagoda, and with reason, for its effect is derived from similar sources to those used by the pagoda builders. That is, it relies on height and repetition of small parts to produce the appearance of greater height and dignity than the actual dimensions permit. Its obelisk finial is unusually large (but was 8 feet higher before its last restoration), and, as may be seen by looking up into it, is constructed as a small spire, strengthened by iron bars. The total effect is quite that of a true spire, but the construction is, strange to say, a dome! (This can be seen from the section in Messrs. Banister Fletcher's History, but is best studied on the spot.) For Wren, who at St. Paul's performed the feat of supporting an apparent dome on a real conical spire, had enough openness of mind to see that the best method of support for such a steeple as St. Bride's is a dome. Accordingly, the belfry stage of St. Bride's steeple is reduced from a square to a circle by means of large squinch-corbels, and on the circle is set a dome of somewhat similar section to the central tower domes of some Armenian churches. On this dome the steeple is built round a central turret, the whole being as ingenious as it is constructionally sound. Still it must be admitted that it does not answer to the accepted definition of a "spire," and is, in fact, a "fanciful emotion," though of an unusually monumental kind.

The steeple of St. Mary-le-Bow (1671-80) is, according to Fergusson, "beyond all doubt the most elegant building of its class erected since the Reformation." "It consists, first, of a plain square tower, above which are four stories. The first is a square belfry, adorned with Ionic pilasters; the next includes the beautiful circular peristyle of twelve Corinthian columns; the third comprehends the smaller lantern and is 38 feet high, which is also the height of the spire." Different authorities give different total heights; it seems to be about 200 feet. The steeple is supported on a dome, as at St. Bride's, but the central stair is hung pendulum-wise in the steeple. "There are, in the leading proportions of this tower and spire, some extraordinary examples in relative heights as compared with widths sesquialterally, which would almost lead one to suppose that, in this respect, our architect was somewhat superstitious" (Gwilt).

In modern times steeples of "free classic" character have been largely used on the belfries of municipal and other public buildings. The only new things recently said on the subject have been the fine steeple of Cardiff Law Courts, and a design recently exhibited for the steeple of a church in Kingsway. Of the latter it may be said, that it would be a good design were it not for the questionable character of some of its details.

TYPE IV. (*b*)—"FLYING SPIRES," OR "CROWNS."

sometimes known as Scottish crowns, though perhaps not with sufficient reason. The construction of this type is shown in fig. 25, wherein, however, the openings giving access through the buttresses have been built up after the removal of the central "cape house," which rendered such openings necessary.

This steeple termination is found along the east coast of Great Britain in parts having trade with the Netherlands. It is strange in these circumstances that no exactly similar types have been discovered abroad, the nearest being that at Oudenarde town hall, not built till 1525; but, the form being not very durable, they may have formerly existed. All the British mediæval examples have been rebuilt at various times.

Commencing at the north in their geographical, not their chronological, order, first comes the steeple of King's College Chapel, Aberdeen, erected for Bishop Elphinstone between 1500 and 1505. Till the nineteenth century this tower contained ten bells (including the heaviest in Scotland). It is not surprising, therefore, that repairs were several times necessary. In 1619 it was to be repaired "with leid quhair leid was, sklaittes quhair sklaittes was, heuine steane quhair heuine steane was," &c. In 1633 it was blown down: "Bot the crown was quicklie afterwards restored in a better forme," "George Thomson, Architect," having his name inscribed on it at this time (date 1634). This is rather a lumpy specimen, a fact due, perhaps, to the "improvements" of Mr. Thomson. It has two arches. It may be as well to explain what is meant by this statement. A flying spire of two arches is one which has two diagonal arch ribs across its base. Each of these arches is formed of two ribs meeting at the summit. As they form a complete arch they cannot be called flying buttresses. They are similar in principle and arrangement to the diagonal ribs of a quadripartite vault. A crown of four arches is one that has two transverse arches in addition to its diagonal ones.

A crown (of which the arch springers still exist) was designed for Dundee parish church with similar details to St. Giles', Edinburgh. A proposal is now on foot to complete it from a design by the late Sir G. G. Scott, which, if it is done, will be of interest as showing a modern English architect's exposition of the crown theme.

Next is Culross. It is uncertain if this crown was ever erected, but the steeple so closely resembles that at St. Michael's Church, Linlithgow, that a similar termination was probably intended. St. Michael's, Linlithgow, erected, according to Messrs. McGibbon and Ross, *c.* 1530 (one of the bells is, however, dated 1490), was the most graceful and elaborate of North British examples. It crowned a very simple tower, with which it was well connected by its rather plain angle buttresses (which still remain). The two arches had an unusual feature in the shape of open tracery parapets on their upper surfaces, running from the angle buttresses up to the central crowning feature—which was, by the way, not like a crown—only Aberdeen has a real crown shape for its finial. The space under the arches was filled by a "cape house" having four ornamentally treated gables, thus remedying the empty appearance notable in some modern crown spires which have only two arches and no cape house. The crown of Linlithgow lasted—unrestored but mutilated—till 1821, when, having become dangerous, it was taken down and the pieces laid aside for re-erection when funds permitted; funds have not yet permitted, and the old fragments seem to have been allowed to disappear.

The Tolbooth crown at Glasgow (126 feet high) is the only ancient one not on the east coast. It has four arches, and, being erected in the seventeenth century, has Scots Renaissance detail, strongly influenced by the Renaissance style of the Low Countries, which, after the Reformation, to a large extent supplanted France as a source of inspiration for Scottish architecture.

St. Giles' steeple in Edinburgh has one of the best known flying spires. First built in *c.* 1500, it was rebuilt about 1648 with the peculiar details of that period, by J. Milne, architect of the Tron parish church, Edinburgh. It has four arches and never had a gabled cape house, though the openings in its buttresses show that the roof was not a flat platform, as at present, and, in fact, a drawing made before its reconstruction shows the spaces between the ribs as being filled in by a leaded roof. Like Linlithgow and Glasgow, there are no buttresses in the belfry stage.

At Pinkie House, near Edinburgh, is a well-head of date *c.* 1613, having a two-arched crown of good Scots Renaissance design, but not being above a belfry it does not properly belong to this essay.

St. Mary the Virgin's Church, Haddington (*c.* 1450), had, judging from its remains, the finest flying spire designed in Scotland. If ever completed, it was destroyed in the English invasion of 1548. There were four arches, as at St. Giles', but the details were purer than St. Giles' now are.

Newcastle-on-Tyne possesses the finest crown (erected *c.* 1475) now in England. Large dimensions and graceful form are its special good qualities. Unlike the mediæval Scottish flying spires, this one has the extrados of its two lofty arches formed as ogee-curved instead of straight lines, thus rather recalling the English market crosses (*e.g.* Chichester). The steeplet supported by the arches is square, and is traceried and pinnacled in a very light and appropriate manner. A curious detail is the use of flamboyant "fish-bladder"-shaped pieces of tracery at the haunches of the crossing arches. It has no cape house, but a slender pinnacle in the centre of each side rises above the parapet and, to a certain extent, fills the gap.

St. Mary-le-Bow steeple, London, was destroyed in the Great Fire of 1666. Judging from old views, it appears to have been a fine and lofty steeple, having a flying spire of two arches, and buttresses in the belfry stage similarly treated to those at Aberdeen. That it was a noteworthy piece of work we may infer from the effort put forth by Wren to give it a worthy successor.

St. Dunstan's-in-the-East is the only seventeenth-century flying spire in England. Erected in 1698 from designs by Wren, it is only tolerably mediæval in detail; in fact it is truly "Gothic," for it is original, not imitative, though original in rather a barbarous way. The heights of its parts are:—Belfry, 32 feet; parapet, 8 feet 3 inches; crown, 20 feet 10 inches; spire finial, 33 feet. Two well-proportioned (but unmoulded) arches, with curved extrados, intersect and support an obelisk on a little composition of intakes rather similar to those on the flying buttresses of St. Paul's. An excellent view of this steeple is obtainable from the little street passing the east end of St. Dunstan's Church, but it also looks well from a distance.

In the last fifty years several flying spires have been designed, chiefly in Scotland. Of these by far the finest is the central steeple of the Coats' Memorial Baptist Church in Paisley, by Hippolyte J. Blanc, Esq., R.S.A. Though founded on St. Giles', it is purified in detail, and possesses a good deal of originality. It has four arches supporting a lofty pinnacle. The Wallace Monument at Causeway-head, by the late J. T. Rochhead, has a notable crown, but not on a belfry stage. It is heavy in effect—no doubt intentionally so, as part of a memorial. The crown of Stevenson Memorial U. F. Church, Glasgow, by the late J. J. Stevenson, is illustrated by a perspective sketch hung in the South Kensington Museum. Unfortunately it crowns a rather stumpy tower. The disconnection between its belfry buttresses and arch buttresses is unpleasant (though found at Aberdeen), and the space under the arches is rather empty, still it is a good example of its type.

There are others, but none calling for special notice here. Modern crowns have sometimes steel tie-bars to take the thrusts of their arches. In such a position the bars rust, are neglected, and become dangerous. The proper way is either to strengthen the tower, or found the crown on a reinforced concrete frame, placed so as to tie together the whole wall-head of the tower.

TYPE IV. (*c*).

This is a small but interesting class, distinguished from ordinary bell gablets by the possession of a belfry stage or chamber which is roofed with a small spire. The chancel arch is

made broad on the soffit, in order to carry such a steeplet, the belfry stage being sometimes corbelled out eastwards and westwards to increase its area. Fig. 9 shows Baginton Church, Warwickshire. Fig. 10 is its plan; and fig. 12 is the plan of the chancel arch in Midcalder Parish Church, Midlothian. This latter is interesting because its specification (of date 1542) is still preserved. The part referring to the steeple (as it calls it) is as follows:—

"And at the west end of the said queir forgane the south west buttreis to rais ane substantious wall of rouch werk sevin fut of breid fra ilk sydewall with ane brace [arch] to be raisit tharein als heych as it may be had to serue the west gavil of the queir with hewin oggeruris [voussoirs]. And abone the said brace in the forsaid west gavill sulyeis [sills] to be laid and ane stepil to be raisit tharepoun VIIJ futis of breid and lenth or [as an alternative] VJ futis braid and XIJ futis lenth within the sidwallis of the said stepill quhilk sidwallis salbe of VJ futis of heich abone the queir thak [roof covering] at all partys with lychtis at all partis for the sound of the bellis in the said stepill to be persit for the orlage [clock] hand and bell in place maist ganand and convenient tharto. And in the northe angell betuix the foresaid wall vnder the grete brace and north wall of the kirk syd to rais ane commodious turngreis [turret stair] to serue the rud loft of the said kirk and stepill foresaid als esaly as it may be had."

The present "stepill" is of nineteenth-century date, but it is still served by the "commodious turngreis."

St. Gabriel Parish Church in Normandy has a similar arrangement, but with a low segmental chancel arch, the soffit of which is ribbed like part of a mediæval barrel vault or bridge. At Largo [fig. 11], Fifeshire, the steeple is supported partly by the chancel arch and partly by a continuous barrel vault, which—*more Scotorum*—extends the whole length of the chancel. This type is rather well suited to small churches and chapels, but has not been much used in modern times; care has to be taken that the abutments of the chancel arch are of sufficient strength.

BRICK SPIRES AND BELFRY STAGES.

Brick was extensively used for steeples in North-East Europe and Italy during the Middle Ages. But brick belfry stages were very seldom covered by brick spires. There are some examples in Italy, for the most part very plain, *e.g.* the Broletto at Monza, and some in North Europe, *e.g.* St. Vincent at Breslau, which has two octagonal brick stages between the tower and its plain octagonal brick spire. Though not quite pertinent to this essay, the brick belfry stage of St. Elisabeth at Breslau is shown in fig. 13. It has no spire, even of wood, but would look very well with a brick one. The north-west steeple of St. Nizier at Lyons has a very late brick spire with stone dressings. In Essex are some good brick belfries; and modern brick spires with stone dressings are comparatively common in London and other districts where stone-coloured yellow bricks are made. These are usually copies of stone spires, the brick being used as a cheap substitute for stone. Hanwell Church, by Sir G. G. Scott, is a typical specimen of this class of spire. There is no reason why spires should not be logically built of brickwork. One can imagine that a spire of different toned bricks, if designed by the author of Lincoln Girls' High School—or, in fact, by any of those English architects who are successfully experimenting with brick textures—might be quite charming.*

CONSTRUCTION, MATERIALS, ETC.

Spires and belfry stages may be classified for construction into the same four types (see p. 616) as from the architectural point of view. The sub-divisions, however, depend not on pinnacles or parapets, but on the form of their squinches. This transition from one form of plan to another can be managed in the following six ways. First by throwing an arch across each angle of the lower plan, *e.g.* Salisbury and St. Michael's, Coventry (where the space behind the arch is very ingeniously filled with a piece of vaulting)—this arrangement sets up

* The campanile of Westminster Roman Catholic Cathedral contains very interesting brick squinches, three of arched form and one (carrying a stair turret) corbelled.

a thrust in a dangerous position. Second, by a series of superimposed arches, each projecting over and supported by the one beneath it (*e.g.* St. Mary's, Oxford)—this has less thrust than the first method. Thirdly, by the French form, or "trompe," similar to the last but with the arch blocks radiating horizontally as well as vertically (*e.g.* St. Jacques at Liège, and many spires in France)—this is a good method, but not so sound as, fourthly, a corbel or pendentive [Witney, fig. 16]. This is a good way where a level wall-head is desired, but the pinnacles and solid filling behind the corbel are entirely unnecessary. None of the upper courses of the spire have pinnacles to hold down their tails, why then should these few rapidly shortening courses at the bottom of the spire be treated differently? It may be said that otherwise the weight of the spire would thrust these lower courses off the corner of the belfry stage, but this is impossible, as each course is relieved of a certain amount of weight by the walls at each of its ends, so that but little is left for the lowest course to bear. This brings us to the fifth method [fig. 35], which is simply to continue the spire until it meets the walls of the belfry stage. Sixthly, lintels may be used [*e.g.* fig. 33]. This method is only applicable in stone to small spires where each lintel may be supported by shorter receding lintels beneath it. Nowadays steel beams may be used, but this is not a permanent mode of construction. The best way (in fact perhaps the best way of all) is to support the spire on a reinforced concrete frame.

The elaborate pinnacles and flying buttresses found at the angles of some Gothic spires are wholly useless (though justifiable for their beauty), for a spire has no thrust if it be well built either of brick, rubble, or freestone in good mortar. If it had a thrust, that thrust would be equal on each of its faces and would make short work of the dormer windows which usually occupy the cardinal faces and whose purpose is to relieve the belfry windows from dead load, not to resist thrusts. This was well known in France where even early spires have light and frankly decorative pinnacles.

Of freestone, no spire of ordinary dimensions need have a greater thickness than 12 inches at the base, tapering to 6 inches at the top; nor should it in any circumstances be less than 5 inches if of uniform thickness. The courses near the top should be connected by stone or slate dowels, but no metal should be used for this.

Of brick, spires may be $4\frac{1}{2}$ inches thick for 15 feet at the top; 9 inches for 50 feet below that, and increase $4\frac{1}{2}$ inches at every 30 feet. A spire 100 feet high will have 10 feet solid at the top, be $4\frac{1}{2}$ inches thick for 15 feet, 9 inches for 50 feet, and 14 inches for the remaining 25 feet. But no part should be less than 9 inches thick, if built in common lime mortar.

The beds of stone spire courses should be horizontal, and the stone must be finely hewn inside, so that the masons may make the bed joints of even thickness throughout their depths, and may make each course of the full depth specified. Externally the stonework should be hewn or polished as smoothly as possible.

Bricks should be laid in "Scottish bond"—three courses of stretchers to every course of headers—except where $4\frac{1}{2}$ inches thick, when they will be in "stretching bond." Their bed joints will of course be at right-angles to the slope of the spire. When a brick spire is built with close joints and inserted "pointing," as in ordinary facing brickwork, the "pointing" is liable to weather out, thus admitting damp into the joints. The proper way is to build in cement mortar and make all joints not less than $\frac{3}{4}$ inch thick, then, if the joints are pointed as the work is carried up, and if the bricks are thoroughly wetted before building, the joints will outlast the bricks and the spire be practically monolithic. The top 10 feet of every spire should be built solid, a copper or bell-metal tube or rod should pass through the solid part and have the end of the lightning conductor bolted to its lower extremity, its upper end being similarly connected to the finial or weathercock.

Chains and Ties.—Many spires were tied by iron rods and chains embedded in their thickness to prevent thrust. This is necessary in openwork spires (such as Freiburg, where every horizontal stone bar is in two courses with an iron rod embedded between them), but is unnecessary elsewhere and is always dangerous—*e.g.* the spire of St. Aldate's, Oxford, had to be taken down because a tie-bar encircling its base had oxidised and burst the stonework. Where ties are necessary they should take the form of hard stone dowels or cubes connecting two courses of stone arranged to break bond.

Pendulums.—A timber pendulum suspended from the solid apex of the spire was sometimes used by Wren and his successors. Such a pendulum is of no constructional use except in that it increases the weight of the upper part of the spire, an object better attained by making more of the top solid. A timber frame, or permanent centering, connected to the spire at numerous points, is doubtless useful in a weak spire, but such an arrangement should not be relied on, the spire being made sufficiently strong to dispense with such assistance; although reinforced concrete floors, at various heights, may be a quite legitimate form of stiffening.

Materials.—These should all be of the strongest and soundest kind obtainable. Stone should be hard and impervious. A spire of granite or Portland stone 6 inches thick will endure longer than one of soft inferior stone 18 inches thick. Bricks should be well burnt and non-absorbent—fineness and evenness of texture are minor considerations. Mortar should be composed of one part Portland cement (to meet the British Standard Specification), to two parts clean sharp sand, or, if expense is an object, hydraulic lime of a good strong kind may be used. The importance of good mortar was early realised, and curious experiments were made to increase its strength and adhesive power: for example, when Louth steeple was repaired in 1627 we read in the "Building Accounts":—

> "Item paid William Harrison for lyme about the steeple IIs. VId.
> Item paid for Vlb. of glue IIs.
> Item paid for Vlb. of allom to put in the mortar IIs. VId.
> Item paid for egge that the mason had about the mortar, Vs. VIId.
> Item paid for strong wort that the mason had for his mortar, Xs. VId."

Despite these precautions the top was blown off in a tempest only eight years afterwards. Steel bars or tie rods should on no account be used unless they are properly encased in concrete, which should be of the composition and quality recommended in the Report of the Royal Institute of British Architects.

Vitruvius' dictum is: "Economy consists in an able and proper application of the means afforded, according to the ability of the employer and the situation chosen. In this respect the architect is to avoid the use of materials which are not easily procured and prepared on the site." And we shall always be well advised to make use of local material whenever possible. Rubble (especially slaty rubble, but also flints) in cement, bricks, and reinforced concrete might all be used with good effect in some situations. Concrete might be covered with "Carrara ware" or with split flints, and bricks might be arranged in patterns or might be glazed or coloured—though no one has yet succeeded in making glazed bricks really interesting.

Calculations.—It is not usual to calculate scientifically the dimensions of a steeple, as past experience has provided precedents applicable to almost every case. But in designing a spire in a new material or of unusual dimensions, the following calculations (all of which are of a simple character) will be desirable. The walls of the belfry stage must be strong and heavy enough to carry the dead load of the spire and to resist overturning by the wind—though, as a matter of fact, the latter precaution is only necessary where spire and belfry are in one monolithic mass of reinforced concrete or brickwork. Its angles must be able to resist the thrust of the belfry window arches, and the thrusts of the squinch arches, if such are used, must be accounted for.

Pinnacles must be calculated to resist overturning by wind pressure.

The sides of the spire must resist the distributed load of wind pressure on their surfaces, and be able to carry the dead load of the upper parts of the spire. They should be heavy enough to prevent risk of the whole spire being overturned by wind pressure (even with monolithic construction this is desirable). And finally the top of the spire should be able to withstand the dangerous stresses set up by wind pressure on the side of a jammed weathercock.

SOME DETAILS.

Vanes and Weathercocks.—These are very ancient ornaments for steeples. Between 961 and 971 Wulstan, the Saxon, wrote of a vane at Winchester Cathedral:—"A weathercock caught the morning sun and filled the traveller with amazement, the golden weathercock lording it over the city; up there he stands over the heads of the men of Winchester, and up in mid-air seems nobly to rule the western world; in the claw is the sceptre of command, and, like the all-vigilant eye of the ruler, it turns every way." At Louth in 1515 "Thomas Taylor, draper, gave the weathercock, which was bought in York of a great baron and made at Lincoln." Later, "the weathercock was set upon the broach of Holyrood Eve and hallowed with many priests there present, and all the [bells] ringing, and also much people there and all to the pleasure of God. Amen." The early weathercocks were of wrought-iron, but in 1444 Bishop Kemp placed a copper vane 4 feet long by 3 feet 6 inches high on St. Paul's. They were usually gilt: 20th October 1627—the Burgh of Glasgow spent £30 on "gilting the cok and thanes and cullouring of the same yallow, with the glob and standart and stanes about the stepill heid" of the Tolbooth. In 1606 the brazen weathercock of St. Nicholas' Church, Aberdeen, was sent to Flanders to be "owergilt." The vanes on Wren's London churches are particularly well-proportioned and of many different patterns, *e.g.* St. Michael, Queenhithe, had a ship, the hold of which could contain a bushel of corn; St. Peter's, Cornhill, has a key 8 feet 8 inches long; St. Mary-le-Bow a dragon 9 feet long. A system of proportions for vanes is given in Price's *British Carpenter*, 1753. *Vanes* are placed on a metal standard having an orb, then a cross, and finally the vane, or cock at the top. This standard is secured to the top of a metal rod or tube passing through the solid part of the spire apex. They are now made to run on ball-bearings and to respond to the least puff of wind.

Crockets are found on spires as early as 1215 in France, but in Britain and Germany only after 1300. At first they were set very close together, subsequently they were placed farther apart and simplified in detail (especially in France). In some spires the crockets are placed closer at the apex than near the base (the best way); on others they are placed farther apart as they ascend. In some their size increases, in others decreases, with their height, while in a few their graduated dimensions give an entasis-like curve. Apart from their decorative effect they serve a useful purpose as permanent ladders for steeple-jacks.

Surface decoration may take the form of imitation roofing-tile patterns, as in Normandy (in Ruskin's view the best form for the purpose); may be tracery panelling, as in St. Stephen's at Vienna; or (in small spires) any quite unobtrusive form of texture-giving pattern, such as diaper or lattice work. Moulded bricks are used in some Italian spires.

Garlands should not divide the spire into equal portions, should not be narrower than half the length of each of their portions nor broader than that length. Salisbury, Chichester, and King's Sutton are all pleasing specimens. Garlands are rarely found out of England.

Entasis.—Entasis, to correct the optical illusion which causes a straight-line sided spire to appear as if its sides were slightly concave, was not used till after the thirteenth century except in a few early French spires. It is, however, a very desirable improvement. Entasis should not exceed 1 inch for every 60 feet of length, and should be at its maximum at one-third

of the height. An entasis can be drawn geometrically (see *The Builder*, 1848), but can quite conveniently be drawn free-hand or by means of a bent lath. In any case it should be drawn full-size and the spire built to the line of form-pieces made from the drawing.

Some mediæval spires have a kind of entasis produced by straight lines. In Scotland these lines change their angle at each string-course. In some English spires these lines were produced by a straight rod fixed to the top of a centre pole which was slightly lowered every day, thus producing a sort of parabolic curve—a day's work in the narrow upper part of the spire being, of course, higher than near the base.

Ventilation and Lighting.—It is important that spires should be well ventilated. Stone and brick, like timber, decay fastest when neither wet nor dry but damp. As stone and brick are absorbent, it follows that the interior of a stone or brick spire will be damp unless a current of air passes through it. To ensure this current, a tier of dormers at the base and a row of small spire-lights near the apex, will be required. These will also provide light for repairs and for the operation of attaching the lightning conductor to the metal rod which passes through the solid top.

Scaffolding.—This may be either Scottish, *i.e.* internal for the belfry and external for the spire, constructed of deals bolted together, and provided with a small jib crane to hoist materials; English, external throughout its height, made of larch poles and putlogs lashed together, materials being raised by a hoist; or, what is an excellent plan, external throughout but built of bolted deals, and with a hoist to raise materials. The Scottish method was formerly used on the Continent. It is shown on drawings by Jan van Eyk, and at Cologne the cranes or derricks remained till last century.

Protection from lightning was sought in the Middle Ages by placing relics of saints in the finials of spires. Though theoretically a good method, practical considerations have led to its supersession by the use of lightning conductors. A specification for a conductor might be as follows:—The conductor to be of 90 per cent. copper rod, weighing 6 oz. per lineal foot (rod is better than tape because it cannot be bent round projections—a conductor should have few bends and no angles). The "earth" to be a Hedges' patent earth, with all the proper connections (this is the most satisfactory way of forming the "earth"). The rod to be fixed to the steeple by strong copper clips (or insulated, if desired—opinions differ as to this; bottle necks are said to form cheap but efficient insulators). The course of the conductor to be as follows:—From the under-side of the solid apex of the spire down the inside to the first spire-light, thence outside and down the south-west side of the steeple (the wettest side) to the "earth." It is to be connected by branches to the bells, the leaded floor of the belfry chamber (but that should be a concrete floor covered with asphalte) and any other metals within 20 feet of its course. All joints to be electrically perfect. The rod to pass all projections with a gradual bend.

At the summit lightning conductors finish with one or more prickets above the vane. Some authorities prefer galvanised iron as a metal for conductors, but, as churches are much neglected in matters of upkeep, and as iron oxidises, copper is preferable for such work.

Stair Turrets.—The earliest stair turrets in this country stop short at the belfry stage and are very unassuming. At a later date they were more emphasised and carried up to the parapet level, but never so prominently in steeples with spires as in spireless towers (such as New College, Oxford).

In France the late steeples have frequently plain circular turrets like telescopes (*e.g.* St. Etienne du Mont, Paris), but at Chartres Cathedral (north-west tower) the stair turret is one of the best and most striking features of the composition. Where steeples are built in receding stages, the stair turret only shows externally in its upper part, *e.g.* Bâle Cathedral.

Oblong Belfries.—The problem of fitting an octagonal spire to an oblong belfry is met in several ways: by using a spire whose sides or angles are symmetrically unequal (*e.g.* St. Nizier at Lyons, St. Michael's, Cupar-Fife); by having a wider parapet on two sides than on the remainder (St. Monan's, Fife); and by boldly exhibiting external galleries on the short sides—*e.g.* Coats' Memorial Church, Paisley).

Finials to stone spires are sometimes of stone richly carved (especially in late Continental work, where they are sometimes too large and out of scale) but more often nowadays of metal, forming a cap to the stonework and a base to the vane, orb, and cross.

Pinnacles in England are usually solid and substantial, in France are hollow (their roofs being built as small spires) and of very elegant construction. The thirteenth-century Norman pinnacles are built like fairy palaces, one can almost imagine them to be the realm whence:

> "Oberon him sport to make
> (Their rest when wearied mortals take
> And none but only fairies wake)
> Descendeth for his pleasure."

Pinnacles may be of any geometrical plan, all shapes from circular to triangular have been tried, but the octagon, hexagon, and pentagon are the most usual, and on the whole the most satisfactory, forms of plan.

Belfry floors should always be fire-proof, unless there is a fire-proof floor lower in the tower; but a circular central opening with an iron cover must be left, through which bells may be raised.

Acoustics of belfries are not much attended to, but mediæval bell-chambers always had a wood ceiling to prevent sound being lost in the spire interior, and at Sandon Church in Essex the belfry chamber is covered by a brick dome, the acoustic effect of which is said to be excellent.

Louvre boards should be either pent-house roofs covered with slates or tiles [the Continental method, fig. 14], or be slabs of stone slate (as in Oxfordshire, *e.g.* Adderbury). Ordinary louvre boards look mean and are not durable. No louvre boards are quite weatherproof, and much can be said for omitting them and making the belfry floor waterproof.

Bell Carriages.—The finest of these are the beffrois of France [see fig. 26, which is a comparatively modest example]. Those in Britain are simply strong lattice beams often so unskilfully fitted to the tower as to give cause for thankfulness that British belfry stages are more substantial, for their size, than those of France. (*Beffroi* is a term of military architecture and has no connection with *belfry*, the French for which is *clocher*.) The bell carriage should be trussed horizontally as well as vertically, should rest on a solid intake, and should at no point enter the tower walls. There is an interesting example of a modern steel bell carriage in the south-west tower of Beverley Minster.

Bells.—The design and construction of bells, though of interest, does not affect our subject. Their use does. Mediæval bells were at first swung to and fro. When a desire for bell music arose in the sixteenth century, it was met on the Continent by the introduction of carillons, *i.e.* small fixed bells struck by hammers, the large bells being rung separately as before. In England, the large bells were themselves tuned and rung to music, and by means of wheels regularly "rung." This ringing exerted a great strain on the bells and "in England most of the really ancient bells have been recast during the last 200 years to fit them for change ringing."—(F. C. Eeles.) It also strains the belfries and should be taken into account in their design. Opinions differ as to the precise relationship to each other in which bells should be hung, but this is a matter of no importance so long as they cannot all swing in the same direction at the same time, and are hung in a properly designed bell carriage.

With regard to the consecration of bells, the Council of Cologne ordained as follows:—"Let the bells be blessed, as the trumpets of the Church militant, by which the people are

assembled to hear the Word of God; the clergy to announce His mercy by day, and His truth in their nocturnal vigils: that by their sound the faithful may be invited to prayers, and that the spirit of devotion in them may be increased. The Fathers have also maintained that demons, affrighted by the sound of bells calling Christians to prayers, would flee away; and when they fled, the persons of the faithful would be secure: that the destruction of lightnings and whirlwinds would be averted, and the spirits of the storm defeated." Although they have enjoyed a long period of popularity as "the artillery of the Church," there were two periods when it seemed as if no more bell towers would be required: first, immediately after the Reformation, when according to a Roman Catholic sermon, "the pretended Reformation which has newly come up from Hell" raged not only against the Church but against her "inanimate instruments," the bells which called her people together. The second period was during the most classic era of the Renaissance:—In 1741 Thiers wrote: "Le petit peuple et la canaille accourent en foule de toutes parts à l'église, non pour prier, mais pour sonner. Car il faut remarquer en passant que les gens les plus grossiers sont ceux qui aiment davantage les cloches et le son des cloches. Les Grecs, qui sont des peuples fort polis, avaient peu de cloches. Les Italiens, qui se piquent de spiritualité et de délicatesse, ont aussi peu des cloches. Les Allemands et les Flamands, au contraire, en ont de grosses et en grand nombre; cela vient de leur peu de politesse. Les paisans, les gens de basse condition, les enfans, les foux, les sourds et muets, aiment beaucoup à sonner les cloches, ou à les entendre sonner. Les personnes spirituelles n'ont pas de penchant pour cela. Le son des cloches les importune, les incommode, leur fait mal à la tête, les étourdit."

"Thiers n'aime pas les cloches, sa boutade le dit assez," is Viollet-le-Duc's comment on this outburst.

Clocks should not be placed in bell towers; but if so used must be placed above the bells, as, the lower bells are hung, the less is the vibration set up by them.

CONCLUSION.

"There are five-and-thirty ways of composing tribal lays, and every single one of them is right," sings Kipling; and the remark is equally true of steeples, especially those of European mediæval type. Sir William Chambers laid down rules, founded on those of the ancients, by means of which splendid and well-proportioned edifices could be designed (or rather compiled) by the proverbial "meanest intelligence"; but he did not attempt to treat of steeples in this way. Nevertheless, certain steeples have been more admired by architects than others. Some are felt to be really well-proportioned by art—not "just growed," Topsy-like. It is, then, possible by the study of published opinions, and of the buildings themselves, their effects and the means producing these effects, to arrive at some general conclusions, showing the limits wherein success is most easily, if therefore ingloriously, attained.

The belfry stage must be dominant and express its purpose, for it is the steeple's *raison d'être*.

The dominant belfry must be supported by a strongly but simply detailed tower; and should be crowned by a strong horizontal line, such as a parapet or heavy cornice.

The spire should spring from the belfry with no hesitation, and must trust for effect to purity of sky-line and good proportion.

If the total height be four, the spire should be not less than one nor much more than two. The belfry stage should be less than one but not less than half.

The tower may be of any reasonable proportion, so long as it is neither too squat, nor too like a factory chimney. If in several stages, a pleasing effect is produced by making each stage higher in proportion to its breadth than that whereon it stands. Buttresses should

neither crush the tower nor look weak. By intakes or batter an effect of entasis must be given to any tower that carries a spire.

Lastly, this essay cannot claim to be a complete work on spire and belfry stage design and construction. It is rather a rough sketch survey of the ground requiring to be covered by such a work. The title limited consideration to spires which surmount belfry stages, and belfry stages surmounted by spires of stone and brick. But to produce a really finished description and history of spires it would be necessary to study the spire idea wherever occurring from China to Peru, in whatever position, and of whatever material. It would also be necessary to study on the spot all the principal and many of the lesser Continental steeples and to collect a multitude of illustrations.

Spire chronology would have to be restudied, and spires in fiction (*e.g.* Ibsen's *Master Builder*), in legend (according to Viollet-le-Duc every great mediæval structure has its legend —such as that of the oxen at Laon), and in superstition, would also repay consideration.

No such work has yet been published, and the information derivable from published works is so fragmentary that it does not seem necessary to give a full bibliography here. Wickes' *Illustrations of the Spires and Towers of the Mediæval Churches of England*, 1853-59, together with Johnson's *Reliques of Ancient English Architecture*, and the chapter on spires in Bond's *Gothic Architecture in England*, give a good idea of mediæval spires and belfries in England. Most of the Scottish steeples are shown (not always accurately detailed) in the works of MacGibbon and Ross, and Billings.

On the Continent examples may be culled from the monumental works published by the Governments of France and Spain, and such publications as the *Historische Stadtebilder* of C. Gurlitt. The Continental Sketch-books of Nesfield and Johnson contain good illustrations but few dates.

Information as to mediæval methods can be found in the pages of Viollet-le-Duc, while a chronology of German spires by W. H. Brewer appeared in *The Builder* in 1865.

This essay attempts to supply a summary of what has already been published, together with a few new ideas which have occurred to the essayist while studying the subject in detail.

It would have been desirable, had circumstances permitted, to include a model specification for a steeple, and a specimen set of statical calculations for a simple spire and belfry. The illustrations might also have been redrawn to a reduced size so that more could have been included in the space available. In fact the work would have been better done had the essayist given a wider berth to his motto!

DEFINITIONS.

Belfry Stage.—A structure intended to contain bells and to protect their carriage from the weather.

Bell Carriage.—A trussed timber or steel cage by means of which bells are hung in a belfry stage:

Hamlet: "What call you the carriages?"
Osric: "The carriages, sir, are the hangers."

Broach (from French *broche*, a spit).—English mediæval name for a spire. By modern writers it has been applied to spires with dripping eaves, but in the Louth building accounts it is always used to distinguish that spire (which has a parapet) from the "steeple" on which it was built. It has also been applied to a certain form of squinch-cover, but without sufficient reason.

Dormer Window or Spire Light.—An opening into a spire. In this essay dormer window means a pedimented window whose sill is immediately above the tower wall-head. *Spire light* means an opening of any shape separated by some distance from the base of the spire.

Garland.—An ornamental band round a spire. In this essay it is taken to mean a band of tracery or carving laid on the spire, as distinguished from a string-course, or a parapet, or gallery.

Spire.—An acutely pointed, pyramidal or conical structure, frequently used to form the roof of a belfry stage, in which position it is referred to in this essay. The term "spire" has in the last two centuries quite superseded the mediæval English forms *broach* (from French *broche*, a spit) and *shaft*. It has a respectable antiquity, being referred to by William of Worcester: "Altitudo de le *spere*" (St. Mary Redcliffe Church, Bristol), "sicut modo fracta continet 200 pedes," "Turris et spera sive le

broche"; and in the records of St. Alphage's Church, London Wall, is a statement that "In the 22nd year of K. Henry the Sixth, uppon Candlemas Eve, in the afternoone, this steeple was fired by lightning, about the very middest of the *spire* or shaft." Spire seems to be the same word as spear, and it is a curious fact that in other European languages the words meaning spire are also capable of application in a non-technical way; *e.g.* French *flèche*, an arrow, *aiguille*, a needle; German *spitze*, a point; Spanish *aguja*, a needle.

Squinch (scoinson, scuncheon, skunchion, sconce).—The mediæval term for a corner (scuntion is still used in Scotland for the corners of a rough opening in a wall, *e.g.* the internal corners of a window jamb). In this essay it means the constructional expedient by which a tower of any geometrical plan is enabled to carry a spire of a different plan.

Squinch-cover.—The weathering or stone-work which protects and covers a squinch. It was included in the mediæval word "squinch," but under the name of "broach" has long been named separately. It may remain separate but should *not* be called a broach.

Steeple.—"A steeple which is a great buildinge made of stone or other mattier and is fourmed broad and foure square beneath and upwards small and sharpe as it were ye flame of fire which endeth sharp."—Bossewell (1572).

"*A.*—A tall ornamental construction surmounting a tower and composed usually of a series of features superimposed and diminished upward, as the steeples of Sir Christopher Wren's churches, in contradistinction to a spire, which is properly a tall pyramid uninterrupted by stories or stages.

"*B.*—A tower terminated by a steeple in case A or by a spire, the term covering the whole structure, from the ground up."—R. Sturgis (1902).

Steeple is also said to mean any bell tower; and a tower as distinguished from the spire it carries.

The other technical terms in the essay are used in their ordinary dictionary meanings.

ILLUSTRATIONS.

These are diagrammatic, not pictorial, and purposely chosen from examples of minor importance (except the modern ones) in order to illustrate clearly particular points.

SHEET I.

Fig. 1. Spire light at Cormery Abbey Church.
,, 2. Spire at St. Leu d'Esserent.
,, 3. Belfry stage at Cormery.
,, 4. Steeple of Notre Dame at Poitiers.
,, 5. Detail of detached stone bar ornaments at St. Leu.
,, 6. St. Martin d'Ainay, Lyons.
,, 7. Squinch-corbel at Beaulieu Abbey.
,, 8. Bell turret at Lausanne.
,, 9. Chancel-arch steeple at Baginton, Warwickshire.
,, 10. Chancel-arch steeple at Baginton. Plan.
,, 11. Chancel-arch steeple at Largo, Fifeshire.
,, 12. Chancel-arch steeple at Midcalder. Plan.
,, 13. Belfry at St. Elisabeth's, Breslau.
,, 14. Central spire at Plessis le Charmant.
,, 15. Squinch-cover on tomb of Sultan Martesseh, Cairo.

SHEET II.

Fig. 16. Diagonal section, St. Mary's, Witney, Oxon.
,, 17. Section of dormer, St. Mary's, Witney, Oxon.
,, 18, 19, 20. German spire forms.
,, 21. Plan of pinnacle, St. Mary's, Oxford.
,, 22. Logie Parish Church, Stirlingshire.
,, 23. Bloxham (Oxon); detail of pinnacle.
,, 24. St. Monan's, Fife.
,, 25. King's College, Aberdeen; crown.
,, 26. Beffroi, Beaulieu Abbey.
,, 27. St. Antholin's, Budge Row, London.
,, 28. St. Pierre, Caen.
,, 29. Lansdowne U. F. Church, Glasgow.
,, 30. Markinch, Fifeshire.
,, 31. All Saints', North Street, York.
,, 32. St. Michael's, Croydon.
,, 33. Dunfermline Abbey.
,, 34. Fenny Compton.
,, 35. U. F. Church, Bridge of Allan, N.B.
,, 36. Clyde Trust Buildings, Glasgow. Not built.

9 CONDUIT STREET, LONDON, W., *29th July* 1911.

CHRONICLE.

The Annual Dinner.

The Annual Dinner of the Institute took place on Tuesday, 4th July, in the fine hall of the Fishmongers' Company, London Bridge, which had been kindly placed at the Institute's disposal for the occasion. Following the much-appreciated precedent set at last year's Dinner, the festival was graced by the presence of several ladies. The President, Mr. Leonard Stokes, presided, and seated on his right were the Lord Mayor, Lady Emerson, Sir Lawrence Alma-Tadema, the Chairman of the London County Council, the Presidents of the Royal College of Surgeons, the Royal Institute of Painters in Water-Colours, the Royal Society of Medicine, the Royal Society of British Sculptors, the Surveyors' Institution, and the Architectural Association, Alderman Sir Charles Johnston, Sir Ernest George, the Dean of St. Paul's, and Judge Rentoul. On the President's left were Lord Saye and Sele, Mrs. Leonard Stokes, the Archbishop of Westminster, the Presidents of the Royal Academy, the Royal College of Physicians, and the Royal Society of Painter-Etchers and Engravers, the Principal of the University of London, Sir Henry Buckingham, Sir Wm. Emerson, the Hon. John Wanamaker, the Prime Warden of the Fishmongers' Company, Sir Aston Webb, Sir Thomas Brock, and Mr. Philip Morrell, M.P. An invitation had been accepted by Mr. John Burns, President of the Local Government Board, but a message was received from him at the last moment stating that he was prevented from coming by Parliamentary duties. The following is a complete list of the guests, numbering 158 all told :—

Mr. John G. Abraham, Mr. John W. Abraham, Mrs. John W. Abraham, Mr. Maurice B. Adams [*F.*], Sir Lawrence Alma-Tadema, O.M., R.A. [*H.F.*], Mr. L. A. Atherley-Jones, K.C., M.P., Mr. Maxwell Ayrton [*A.*], Sir Thomas Barlow, Bart., K.C.V.O. (President of the Royal College of Physicians), Mr. Douglas C. T. Bartley, Mr. Walter C. Beetles, Mr. G. E. Bond (President of the Society of Architects), Mr. C. W. Bowles, Sir Thomas Brock, K.C.B., R.A. [*H.A.*], Sir Henry Buckingham (Sheriff of London), Mr. John J. Burnet, LL.D., A.R.S.A. [*F.*], Sir Edward H. Busk, M.A. (Prime Warden of the Fishmongers' Company), Mr. C. MacArthur Butler (Secretary of the Society of Architects), Mr. J. Dixon Butler [*F.*], Sir Henry T. Butlin, Bart. (President of the Royal College of Surgeons), Mr. Henry C. Charlewood [*F.*] (President of the Northern Architectural Association), Mr. Christian Christensen, Mr. Edgar F. Church, Mr. Harold E. Church [*A.*], Mr. H. Chatfeild Clarke [*F.*], Mr. Max Clarke [*F.*], Mr. T. Costigan (Secretary of the London Master Builders' Association), Mr. S. Forrest Cowell (Secretary of the Royal College of Surgeons), Mr. J. D. Crace, F.S.A. [*H.A.*], Mrs. Crace, Mr. Richard Creed [*F.*], Mr. Richard Creed, jun., Miss Creed, Mr. T. Harrison Dakin, Dr. W. Morriston Davies, Mr. T. Raffles Davison [*H.A.*], Mr. Frank Dicksee, R.A. [*H.A.*], Colonel G. A. H. Dickson, M.V.O. [*F.*], Mr. J. W. Domoney (Chairman of the Bridge House Estates Committee), Sir William Emerson [*F.*], Lady Emerson, Mr. C. W. English, Mr. Frederic R. Farrow [*F.*], Mr. W. Fleming (Secretary of the Royal College of Physicians), Mr. William Flockhart [*F.*], Mr. Frank Fox [*A.*], Mr. Percival M. Fraser [*A.*], Sir Ernest George, A.R.A. [*F.*], Mr. James S. Gibson [*F.*], Mrs. Gibson, Mr. G. Bird Godson (President of the London Master Builders' Association), Mr. Edward Greenop [*A.*], Mrs. Edward Greenop, Mr. John Hamp, Mr. Stanley Hamp [*A.*], Mr. Henry T. Hare (*Hon. Secretary*), Mr. G. Lovell Harrison, Mrs. G. Lovell Harrison, Mr. W. H. Harrison [*F.*], Mrs. W. H. Harrison, Mr. W. A. Hawes, Mr. Lewis Hind, Miss Florence Hobson, Mr. James S. Holliday (President of the Institute of Builders), Mr. George Hornblower [*F.*], Mrs. Hornblower, Mr. Edgar Horne, M.P. (President of the Surveyors' Institution), Mr. Gerald Horsley [*F.*] (President of the Architectural Association), Mr. George Hubbard, F.S.A. [*F.*], Mrs. Hubbard, Mr. John Hudson [*F.*], Mrs. Hudson, Mr. John Hunt [*F.*], Mrs. Hunt, The Very Rev. Professor Inge, D.D. (Dean of St. Paul's), Mr. T. E. Lidiard James [*F.*], Sir W. Goscombe John, R.A. [*H.A.*], Mrs. Goscombe John, Alderman Sir Charles Johnston (Sheriff of London), Mr. J. P. Lassen, Sir Charles Lawes-Wittewronge, Bart. (President of the Royal Society of British Sculptors), Mr. Sydney E. Letts, Mr. W. J. H. Leverton, Sir James Linton, P.R.I. [*H.A.*], Mr. Edwin L. Lutyens [*F.*], Mr. Ian MacAlister (*Secretary*), Mrs. Ian MacAlister, Mr. Fred W. Marks [*F.*], Mr. R. W. May, Mr. Stanley J. May [*F.*], Mr. H. A. Miers, F.R.S. (Principal of the University of London), Mr. Alfred Moor-Radford, Mr. Philip Morrell, M.P., Sir Henry Morris, Bart. (President of the Royal Society of Medicine), Mr. John Murray [*F.*], Mr. Harold Oakley, Mrs. H. Odell, Mr. R. Barry Parker, Professor Beresford Pite [*F.*], Mr. E. Turner Powell [*F.*], Sir Edward Poynter, Bart., P.R.A. [*H.F.*], Mr. Andrew N. Prentice [*F.*], His Honour Judge Rentoul, K.C., Mr. Richard M. Roe [*F.*], Mrs. Roe, Mr. P. F. Rowell (Secretary of the Institution of Electrical Engineers), Mr. Joseph Sawyer [*F.*], The Right Hon. the Lord Saye and Sele, Mr. W. H. Seth-Smith [*F.*], Mr. Herbert Shepherd [*A.*], Mr. W. E. Shepherd, Sir Frank Short, R.A. (President of the Royal Society of Painter-Etchers and Engravers), Mr. Gilbert M. Simpson, Mr. John W. Simpson (*Vice-President*), Mr. John F. Slater [*F.*], Mrs. Slater, Mr. Marion H. Spielmann [*H.A.*], Mr. Leonard Stokes (*President*), Mrs. Leonard Stokes, The Right Hon. Sir Vezey Strong (Lord Mayor of London), Mr. Basil M. Sullivan, Mr. L. Sylvester Sullivan [*A.*], Sir Henry Tanner, C.V.O., C.B., I.S.O. [*F.*], Sir Brumwell Thomas [*F.*], Sir J. Wrench Towse (Clerk of the Fishmongers' Company), Mr. Deputy Turner, Mr. Raymond Unwin [*F.*], Mr. Horace M. Wakley [*F.*], Mrs. Wakley, The Hon. John Wanamaker, Mr. Edward Warren, F.S.A. [*F.*], Mr. Septimus Warwick

[A.], Mr. Paul Waterhouse [F.], Sir Aston Webb, C.B., C.V.O., R.A. [F.], Dr. Bourne (Archbishop of Westminster), Mr. Thomas B. Whinney [F.], Mr. A. G. White (Secretary of the National Federation of Building Trades Employers), Mr. Edward White (Chairman of the London County Council), Mr. J. G. White (President of the National Federation of Building Trades Employers), Mr. W. Henry White [F.], Mrs. W. Henry White, Mr. Clyde Young [A.], members of the staff, and representatives of the Press.

An excellent programme of music was performed during the evening by Herr Gottlieb's Vienna Orchestra. The usual loyal toasts were proposed by the President and duly honoured.

Dr. H. A. Miers, F.R.S., Principal of the University of London, proposed the toast of "Architecture and the Sister Arts." He said that he supposed that in that Hall it would be out of place to say that he was like a fish out of water. But he could compare himself to that Englishman who, on being invited to a dinner of Scotsmen in London, found, when called upon to reply to the toast of his health, that he was the only Englishman present, and on rising to his feet said, "Ladies and gentlemen, I am a Scot"—and then, after the rounds of applause had died away, adding, "neither by birth nor inclination." He took it that no one would say that he was an artist neither by birth nor inclination. Most people would wish to be artists even if they had not been born with the taste or desire, and he could say that from his earliest days he had taken an interest in architecture. One of his earliest escapades was, after reading Parker's Glossary, to run away from school with a comrade to study the architecture of Iffley Church. He could claim that the tender influences of the art had been acutely felt by him in his later life, for no one could spend five years under the engrossing influence of Eton, three years at Oxford as a student, and thirteen years afterwards as a Professor, without realising what an important part architecture plays and must play in the education of one whose early life is passed in contact with some of the most beautiful examples. The traditions and inspiration of both Oxford and Cambridge were largely due to the fact that they possessed such beautiful old buildings. There was a passage in the autobiography of John Stuart Mill relating how, when a boy, living amid sordid surroundings, with nothing to inspire him in the buildings in which he lived, he paid a visit to the Benthams at Ford Abbey. These fine old buildings among historic and romantic surroundings greatly impressed him, he said, and gave him a freer existence. Coming from Oxford to London, he (the speaker) had felt not so much the inspiring influence of architecture as its deplorable absence. He called to mind the visit some time ago of a German professor, who was sent to report on the buildings in England which seemed to represent an idea, which were the expression of a dream—some historical fact or faith which stood for something to the people. Coming from Oxford to London he found this great difference—whereas in Oxford there were buildings which stood for idea and tradition, he was ashamed in coming to London to find it was the only University city which had no buildings that it could call its University, no central hall or residence. If London could ever, with the help of some generous benefactor, and with the assistance of some great sculptor and painter, erect a fine work of architecture which would stand for the academic idea—be the visible expression of the University—then they would have performed a great service to London. Only once had he met a London cabman who professed to know where the University of London was, and that man said, "Is it somewhere in Hoxton, sir—or is it Holloway?" There was, it seemed, some confusion in the cabman's mind between the University and the Union. If that was so, it was because not only was there no University building in London, but because architecture had run riot, and had produced buildings intended for unions which could be mistaken for Universities. The attempt was being made in one part of London, owing to the enterprise of Professor Geddes, to give Crosby Hall something like academic surroundings, and something in the nature of University character. Until he came into the building that evening he did not know what were the sister arts, but he had little doubt that sculpture was one. In coming to London he had been impressed, again, with the want of alliance between architecture and sculpture—the sort of alliance that impressed the mind of those who studied the ancient arts, or visited Greece and saw what that alliance meant in the days of the best Greek art. The ordinary traveller who visited the sculpture galleries of Europe, or the ruins of the fine buildings of Greece or Rome, failed to realise what an important part sculpture played in those days—in the beauty and meaning that it conferred upon those buildings. Those who visited museums and saw sculpture torn from its surroundings and wrongly restored did not always understand the important part it played in the buildings. He hoped that this association in the toast of the two arts of Sculpture and Architecture meant that we realise the need of a close union between the two. Those who a few years ago visited Dresden, for instance, and saw a headless statue there, and then went to Bologna and saw a bust labelled "Head of a Youth," failed to realise that together they made up the Athena Lemnia that once stood on the Acropolis. Many travellers missed the meaning of this association because the sculpture and architecture were not brought together. London was the only great city of the world which did not possess an adequate collection of casts from the antique. At Munich, Berlin, Copenhagen, and elsewhere were fine collections, but not so in London, though he was glad to say that a beginning was being made. As to Painting, at the present moment there was an exhibition at the University of London which took one back to the beginnings of painting; he meant the extraordinary collection brought back from Egypt by Professor Flinders Petrie. He did not know what other arts were to be associated in this toast; perhaps the art of Town Planning, which now figured so largely in the public mind, could be included. The English were not to be regarded as an artistic nation, but the interest in town planning indicated a desire for artistic architecture to make our towns a systematic development of artistic buildings, rather than a collection of structures thrown together in a haphazard way, as most of them were at the present time. We were endeavouring now to take steps to further architectural education in the University of London by combining what were now two small and scarcely adequate schools of architecture in the hope that we might make of them one large and strong school in which, he trusted, they would not only have the help of the Institute, but of the whole profession of architects. He hoped before long to be able to say that they were beginning to teach properly the subject of sculpture at the University of London. The toast was "Architecture and the Sister Arts"—

the sister arts being the Three Graces that accompanied the architect throughout the world, or, from another point of view, the Three Fates which determined his career.

Professor BERESFORD PITE [*F.*], responding for "Architecture," said that Professor Reginald Blomfield had designated Architecture as the Mistress Art, and in his absence he would make no apology for the academic use of the expression. He accepted with gratitude the compliment paid to them by the Principal of the University of London. It could not fail to be noticed by any keen observer that in the basis of a sound and completely organic system of architecture the great arts of painting and sculpture lived, moved, and had their being. We were living in an age of a high degree of specialisation of all forms of thought and action; painting had specialised in itself, and had come in to decorate frames; and sculpture had left the historic position it formerly occupied in the pediment and the frieze and was now isolated in various other ways in buildings. In the proper subordination of these arts to the Mistress Architecture, they had their proper sphere in the family of the arts—their proper application in the external and internal decoration of buildings which was necessary for their life and existence. In this proper subordination to the Mistress Art, something was done to restore the arts to that proper equilibrium which the proposer of the toast referred to when speaking of the great buildings for the University of London which he hoped to see erected one day. The Principal thought our buildings did not express artistic tradition; but we had artistic tradition as great as any artistic nation. There was a larger and deeper interest in the beauty of our cities at large than some of us were quite conscious of, and as an Institute of Architects they had a right to claim attention. Speaking in the presence of the Lord Mayor of London, he congratulated him on presiding over the destinies of one of the most beautiful cities in the world. Within the area governed by the Lord Mayor and the distinguished Chairman of the London County Council were the Palace of Greenwich, Somerset House, Waterloo and London Bridges, to say nothing of St. Paul's Cathedral, a crown of Renaissance building such as no other city possessed. What city was there in France or Germany which had such a collection of mediæval structures as the Tower of London, Westminster Hall, St. Bartholomew's, Smithfield, the Temple Church, Southwark Cathedral, and, last of all, Westminster Abbey? Architecture in London was well served in the past. It was difficult to speak of the future. They were in the presence of those who were making the present we live in. Having alluded to the recent remarkable Town Planning Conference arranged by the R.I.B.A., the Professor said that the gathering together of men to consider the adequate treatment of buildings and their sanitary state and effect was a movement of the greatest importance, and he would suggest to the Principal of the University that town planning was architecture in its largest idea and most universal aspect. It was beautiful and touching to find that Parliament had recently conferred on the Corporation the honour of opening up and of exhibiting to the other side of the river and the world that lay beyond a view of St. Paul's Cathedral which would be unrivalled. He congratulated the Corporation on having secured the assistance of three distinguished members of the Institute, in whose character and ability they had every confidence in regard to the new bridge. But the question was too large to be left only to them; it affected the dignity of the whole City and their appreciation of the greatest monument of the architectural art we possessed as a nation. It was a question which concerned all who valued this great wonder of architectural art. They possessed in the site upon Ludgate Hill and the river at its foot a situation which placed London in the position of beauty which was well worth their interest and demanded their greatest attention. They might hope that it would be successfully dealt with. He was not sanguine enough to believe that the solution was quite so near as they should like. It was complicated with many questions. It was complicated with the question of the safety of the dome; it was complicated with a number of intimate financial questions of which he must not venture to speak. But whatever the difficulties, whatever the responsibility might be, he was sure they would back the Corporation and support them in any scheme which was sufficiently large to do justice to St. Paul's Cathedral and to Sir Christopher Wren.

Sir E. J. POYNTER, Bart., P.R.A. [*Hon.F.*], responding for "Painting," said he felt some difficulty in approaching a subject so vast, in view of the very brief limits which he should impose upon himself; for, short of a studied lecture, there was no way of dealing adequately with a topic so complicated and so questionable in its aspects. Nor did he know exactly how he should best return thanks for "Painting" as an abstract proposition. If the toast was intended as an expression of their kind wish for the prosperity of the art from a commercial point of view, he felt some regret at not being able to summon the ghost of his great predecessor, Sir Joshua, or one of his contemporaries to reply to it, for in the picture market they were now experiencing such a success as his (the speaker's) own contemporaries might well look upon with envy; nevertheless, for their good wishes, so far as they extended in this direction, he thanked them most heartily, not without a pious hope that they might be realised. As for that other success, the "succès d'estime," the success which, though less substantial, was no less a source of pride and encouragement, he might truly say that the English School had of late years gained it in a remarkable degree. In all the international exhibitions that had been held in the last twelve or fourteen years the English painters had, to say the least of it, shown themselves second to none; and notably at the present Exhibition at Rome, where by common consent the English section was acclaimed as the most distinguished feature of the Exhibition, and he ventured to say that the English school of painters, if they would keep their own individuality and cultivate that love of beauty which had been its distinguishing characteristic from the days of Reynolds, Constable, and Turner, and others—he ventured to affirm that they had nothing to fear in any competition for honours in the world. But he had not forgotten that this toast, as well as that of "Sculpture," was associated with that of "Architecture," as was only right on an occasion when painting and sculpture were the guests of the distinguished institution which was so hospitably entertaining them; nor did he forget that painting took its highest form and fulfilled its noblest function when used for the decoration of great works of architecture. It was the first use to which painting was put, and he might say that the majority of the greatest works of painting that the world had seen were produced for such a purpose, adding a lustre to ecclesiastical and public buildings and private palaces which frequently outshone the edifices which they adorned. When he

mentioned the works of Michelangelo and Raphael in the Vatican, the paintings of Giotto in the Arena Chapel, of Orcagna and Ghirlandajo in Sta. Maria Novella, of Tintoretto in the Scuola of San Rocca, of Pinturicchio in the Library at Sienna, he merely touched at random on a few amongst the hundreds of examples which the combination of painting with architecture presented to them in Italy alone, and where, if the building would suffer by the loss of the paintings, it might with equal justice be said that the painter would never have risen to such heights but for the architecture whose beauty he was called upon to enhance, for the treatment of great spaces in noble architectural surroundings led to the highest form of expression which the art of painting could achieve. He had frequently dwelt in this sense on the importance of giving opportunities of this kind to our painters. The mere fact that an artist felt himself to be working for something that should permanently appeal to the public, that he was doing something of national importance, was a stimulus to him to put forth his best efforts, to bring his intellectual and artistic faculties to their highest use. Such efforts were the best antidote to that loose method of work from nature which too often formed the staple of our exhibitions; and it was sincerely to be hoped, in the interests of art, that public spirit would not stop at the completion of the corridor in the House of Lords, which had proved such a success, but carry further the scheme of decoration originally proposed for the Houses of Parliament. But the association of painting with architecture had another field of the highest usefulness, in which architecture became the handmaid of the painter. He was hardly over-stating the case when he said that from the time of Giotto to that of Tintoretto there was not a painter in Italy who had not a thorough knowledge of architecture and did not understand its value as an adjunct to his compositions; indeed, everywhere, up to the middle of the eighteenth century, there was hardly a figure painter who could not enrich his subjects with the splendour of architectural backgrounds and accessories. Those in this country who were capable of so doing at present might almost be counted on the fingers of one's hands. This lamentable ignorance of a great and closely allied art was a serious handicap, both by the limit which it imposed on painters in the choice and treatment of their subjects, and by the still more lamentable failure to design correctly when they attempted anything of the kind. It was his hope that in the Royal Academy Schools a course of architecture might before long be imposed on our painter students, instead of its being left, as at present, to the student to take it up as a voluntary exercise.

Sir CHARLES LAWES-WITTEWRONGE, President of the Royal Society of Sculptors, responded for Sculpture, and was understood to say that the alliance between the arts was much more of a pleasure to be associated in than to talk about. The Society he was connected with was quite a young Society, but they had been immediately recognised by the Board of Trade, and it became their duty to organise various exhibitions which had taken place, and especially the British Exhibition at Rome. The use of sculpture to decorate our buildings reacted in favour of the school of sculptors, and he hoped that our sculptors in the future would be able to hold their own, and perhaps even surpass the contemporary schools of the world.

Sir ASTON WEBB, C.B., C.V.O., R.A. [*F.*], proposed the toast of "The Houses of Parliament." He said it was usual on occasions of the kind to say that Parliament had little to do with matters of art, but he thought that in the last two or three years they had had more to do with questions of art than before. The House of Lords had dealt with several important art matters, including the decoration of their own building, and the House of Commons had just given an opinion on a very important question of art, and decided that art should be considered in such an important matter as throwing a bridge over the Thames at St. Paul's. He had been told by an M.P. that what the result of the debate on the question would be in the House of Commons no one knew until it was declared, and said that he thought it was the first time that the House of Commons had expressed a direct opinion on a question of art and been left entirely free to express their views. He thought that result was largely due to the persistence of the President of the R.I.B.A. Another matter that the House of Commons had devoted a good deal of time to and which had interested architects very largely was as to housing and town planning. A gentleman asked him quite recently if a Bill on the subject had been passed, and if it would do any good and would enable him to pull down insanitary cottages, as in his parish there were a large number of cottages, the bedrooms of which had no windows, the only openings being 9" by 9" in the walls, filled up with a solid bit of glass. He (the speaker) replied that the cottages could have been pulled down without the Act; but as to that Act, it was a splendid measure, and the more it was used the more that would be realised. It was on these lines that the Houses of Parliament could assist them in their art work. They all knew that the Houses of Parliament could not provide a design, not the Cabinet Council, nor the Parliamentary Committee, nor even their own Institute as an Institute; but what all these public bodies could do, and, he was glad to say, were doing, was to see that when great public schemes were brought forward they were placed before those who could and were willing to prepare a scheme for them. It was on the lines of the Housing and Town Planning Act that so much could be done by the Legislature towards the good of our art and the people. If it was true, as they knew it was, that righteousness exalteth a nation, it was also true that bright and happy homes and beautiful surroundings would increase and multiply the happiness and brightness of the people of the country.

Lord SAYE AND SELE said he could not get away from the fact that they were engaged in the House of Lords in passing a Bill which some of them thought would bring salvation to their fellow men, and some of them thought would bring them to what was expressed by another word ending the same. Perhaps it would appeal more to them if he said that some of them thought they were building a house and others thought they were pulling it down. But at any rate if he thought they were building a house, it would appeal to them if he said he thought they had a very difficult task to perform, because they did not know what the quantities were. He had attended in this noble House some years now, and he found that the quantities were some 600 noble lords, but he had never seen more than 200 of them, and he did not know where the other 400 were; and what would they think if they were put into the position of building a house with such bad information as that? As the only living kinsman of that grand old specimen, the Bishop-Architect William of Wykeham, living in the house where he lived, he could

ay it was the greatest pleasure to be associated with architecture and in having a son who hoped to be an architect in the near future.

Mr. EDGAR HORNE, M.P., briefly responding for the House of Commons, said he heartily agreed with the suggestion that they, as legislators, were architects engaged in preparing designs, some of a State character and some of a promiscuous kind. Perhaps, however, they were not so much architects as decorators, for they did not think so much of their foundations as of the gold and tinsel trappings.

Mr. PAUL WATERHOUSE [*F.*], in a felicitou speech, proposed the toast of the guests, coupling with it the names of the Lord Mayor and the Archbishop of Westminster. He alluded to the energy and ability displayed by Sir Vezey Strong during his year of office, especially in dealing with those world-wide and non-Metropolitan causes which it was possible for an energetic Lord Mayor to entertain and to further. In connection with his allusions to Archbishop Bourne he introduced a tribute to the memory of two great architectural names, Pugin and Bentley. In conclusion, he expressed the acknowledgments of the Institute to the Fishmongers' Company, by whose gracious permission the use of the Hall had been made possible.

The LORD MAYOR, in responding, said he had the honour, on behalf of the guests, in company with his Grace the Archbishop, to assure them of their gratitude in having been so kindly and so hospitably entertained as the guests of the Royal Institute of British Architects. He was very much obliged to Mr. Waterhouse for the complimentary things he had said. He assured them of the gratitude he felt for the honour of being entertained as their guest. It was a great privilege for the mere man in the street, whom he represented, to come into the citadel of architectural learning and for a few hours to be permitted to sit at their feet and learn of them.

His Grace the ARCHBISHOP OF WESTMINSTER said he was greatly honoured in being associated with the Lord Mayor in being permitted to return thanks to that distinguished company for their gracious hospitality that evening. The Lord Mayor, he took it, had replied mainly on the part of those who approached Architecture from the civic standpoint. Where he (the speaker) had come in contact with the architectural world was on the ecclesiastical side, and he thought that on that account the President and his colleagues had given proof of very great magnanimity in inviting him to be their guest that evening, because, dealing as he did with a large and congested and not over rich population, the great part of his work consisted in trying to set up ecclesiastical buildings of the simplest possible kind at the least possible expense; and on that ground, looking back on his reminiscences, he found that generally his first interview with the many architects with whom he might claim friendship was the most pleasurable of the series; he entertained great hopes, and his friends entertained great hopes, of possible things they might accomplish; and later on he had the unpleasant task of trying to reconcile artistic conceptions with a very exiguous purse; and yet, as the proposer of the toast had kindly alluded to the late Mr. Bentley, he would never forget he was continually under the shadow of what is recognised, he believed, as the very masterpiece of modern ecclesiastical architectural skill, and on that account, if at times he was bound to curb artistic aspiration, he was sure they would understand that after all we owe the late Mr. Bentley he could never be ungrateful to the members of their profession. Perhaps they would allow him to say that after all it was the Christian Church that offered architects in every age the highest opportunity of exercising their skill, and that on their part they had done more than anyone else to add majesty and dignity to Divine worship. He would express the hope that while they might have every possible success in every department of their art—civic and domestic, and whatever it might be—still, they would never fail to find in religion the fullest and highest sense of the artistic conception.

ST. PAUL'S BRIDGE.

Continuing the record in these pages of the proceedings in connection with the project for a new bridge across the Thames as put forward in the Corporation of London (Bridges) Bill, the Corporation, in accordance with the instruction of the House of Commons that the opinion should be consulted of an architect or architects chosen from among the leading architects of the day, have submitted their scheme to Sir William Emerson [*F.*], Thomas E. Collcutt [*F.*], and Dr. J. J. Burnet, A.R.S.A. [*F.*]. The result was made known on the 11th inst. at a meeting of the Select Committee to whom the Bill had been recommitted, when the architects' report, dated 7th July, was presented as follows:—

The Architects' Report.

We have now completed our inquiries and consultations, and have the honour to reply to your letter inviting our opinion and advice in respect to the instruction of the House of Commons to the Committee on the Corporation of London (Bridges) Bill "not to agree to any scheme for the construction of the proposed new bridge, including the approaches thereto, until they are satisfied that the scheme, both in respect of architectural design and convenience of traffic, is the best adapted to the public needs and best suited to the character of the site."

2. We construe the words "the scheme" in the instruction as meaning the official scheme of the Corporation, or any alternative scheme, for a bridge to open out at or near St. Paul's Churchyard, which is the "site" in question. We have considered the scheme and also some other suggestions. The instruction opens up the three questions of—(*a*) The best adaptation to public needs; (*b*) Appropriateness to the character of the site; and (*c*) Architectural design.

3. We accept as essential conditions for a satisfactory scheme the following requirements:—(1) That the projected bridge must have its roadway at the level above high-water mark shown upon the section; (2) that the linking of the northern and southern tramway system is an integral part of any scheme; (3) that the roadway from the bridge must be carried as a bridge over Queen Victoria Street.

4. As to (*a*) adaptation to public needs, the object of the Bill is to relieve the congestion of traffic between south and north over London, Southwark, and Blackfriars Bridges, from a point in Southwark, near Marshalsea Road, direct to the main traffic roads to the north, *via* Aldersgate, and to offer facilities for connecting the tramway systems on the south with those on the north. After the most careful consideration, both separately and in frequent consultation, of various suggested or

possible routes, and study of the general plan of London roadways and contemplated tramways in the neighbourhood of St. Paul's, we are of opinion that the line of route proposed by the Corporation is best adapted to the public needs and to fulfilment of the objects of the Bill.

5. As to (*b*) appropriateness to the character of the site, we would point out that in the Corporation scheme the situation of St. Paul's in the relation of its line of axis to the central line of the river is not a factor. The area of the Churchyard would be increased, and there would be no consequential obstacle to the consideration of future improvements of the Churchyard. Moreover, better views of the Cathedral would be secured on the only side on which this can be done, without disturbing the picturesque charm of present surroundings. There is the further point of great practical importance that, owing to the depth of the Cathedral foundations and the quality of the subsoil, it is only on the eastern side of St. Paul's that a subway for tramways can be constructed above the level of the foundations without menace to the structure. (It is understood, of course, that the subway is not to be deeper than shown on the section.) Having carefully considered these points and all the surroundings of the site we are of opinion that the alignment proposed by the Corporation is the one best suited to the character of the site.

6. In respect to (*c*) architectural design, we are in complete accord with the opinion of the Council of the R.I.B.A., that an architect or architects should have been appointed to collaborate with the engineers as to the general design of the bridge and its approaches when the scheme was initiated. In making this observation, the Council of the Institute were undoubtedly actuated by the desire—shared, of course, by the City authorities—that a fine monumental bridge of masonry should be erected. In skilled hands the bridge and its approaches can be made a magnificent addition to the river scenery about the City.

7. Since the scheme was published side issues have been raised as to the "opening up" of St. Paul's. At first sight, and without detailed expert scrutiny, the idea that the opportunity might be taken to open up a vista terminating in the south transept of the Cathedral is attractive. The project shown by black lines on the plan has appealed to some architects and to a section of the public, and there has been a tendency to subordinate the main purpose of the new avenue of traffic between north and south to what would at the best be a subsidiary aim. In considering the project three points of great importance have to be borne in mind. They are: —(i.) The alignment of the bridge in relation to the river, since the proposed vista would only be obtainable by the building of a skew bridge; (ii.) the width of the northern approach to the Cathedral; and (iii.) the possibility of future river embankments being constructed below Blackfriars.

8. We are of opinion that the suggested alignment is not good, and that as it would be almost impossible to make a satisfactory monumental design for such a skew bridge in masonry, it is probable that the bridge would have to be of steel—a contingency which the R.I.B.A. evidently wished to prevent.* There is strong presumptive evidence that Wren did not design the side elevation of the Cathedral to be looked at from any great distance. This is shown by the bolder treatment of the west front and of the Dome as compared with the comparatively superficial ornamentation of the other wall surfaces. And in this matter the great architect offlowed the best traditions of his profession. We know of no famous public building, either here or on the Continent, in respect to which it has been considered necessary to arrange great roads leading to the side of the structure. Wren evidently did not contemplate such approaches in the case of the Cathedral, but he did contemplate a wide road at the east end, and that he was capable of taking large views as to future requirements was shown by his well-known plan for the rebuilding of London. We may add that the Greeks—great artists—took especial care that the Parthenon should not be approached by a road leading directly up to it.—[*I am of opinion that it would be possible to construct a bridge over the river giving a vista of St. Paul's, which I should much prefer if found practicable. —T. E. Collcutt.]

9. Further, it is to be observed that views not less interesting than the suggested "vista" will be opened up by the roadway proposed by the Corporation, and that it would not prevent improvements subsequently being made, if necessity arose, in connexion with a general scheme for improvement of the Churchyard. We wish it to be clearly understood, however, that in our opinion there is a limit to such "improvement," and that to exceed it would be to place Wren's design at a positive disadvantage by bringing it under conditions it was not designed to meet. But such limit would not be exceeded by the improvements the proposed Corporation route would effect, and facilities would be offered for opening up picturesque views of St. Paul's which have hitherto been obscured.

10. While it has been no part of our duty to examine with care the financial aspects of the conflicting schemes which have been the subject of public discussion, we feel it right to say that we have been impressed by the extent to which the "vista" scheme would involve altogether heavier expenditure, out of all proportion to the Corporation project.

11. With respect to the suggestions we are asked to make, we agree with the Council of the R.I.B.A. in their recommendation that architects should collaborate with the engineers in the designs for the bridge, the archways over Queen Victoria Street and Thames Street, and the approaches as well as the accesses from the lower and higher levels, and in the debouchment of the roads. If the general scheme is passed by Parliament we advise that such architect or architects be appointed.

12. We submit the following suggestions for improvement of the scheme as shown on the plan:—

(1) That where the bridge road debouches on to Cannon Street it should be opened out as much as possible within the lines of deviation, and that the corner building to the south-east of Old Change be also acquired, thus opening that corner towards St. Paul's.

(2) That the building frontage along Old Change should be no nearer to the east end of the Cathedral than at present, any future buildings following that line, and that the whole of the existing buildings between St. Paul's and Old Change should be removed.

(3) That at some time the property now obscuring the south end of the Post Office in St. Martin's-le-Grand be acquired, and the space opened up and arranged so that a fine suitable architectural feature might centre on the line of the new bridge. If this were done it would also be possible for Foster Lane to somewhat relieve the traffic by St. Martin's-le-Grand.

These alterations would give views of both the south-east and north-east sides of St. Paul's not hitherto obtainable. Further, ample space would be provided for the traffic at the road junctions, and right-angled crossings would be avoided.

Possible Damage to St. Paul's.

The following letter to Mr. Basil Mott, engineer to the Bridge scheme, from Mr. A. J. Barry, engineer to the Dean and Chapter of St. Paul's Cathedral, was laid before the Committee :—

In reply to your letter of the 27th inst., in which you inquire what my views would be as regards the possible damage to St. Paul's Cathedral if a tramway subway were constructed nearer to the south side of the Cathedral than shown on the plans that have been discussed between us, I beg to say at once that I should regard with the gravest concern any proposal that would involve the excavation of the subsoil nearer to the Cathedral than as shown on the plan you submitted to me, more particularly if such disturbance of subsoil took place on the south side of the Cathedral.

After discussing with you the *maximum* depth to which the foundations of the tramway subway as proposed to be constructed under your Bill of this year should be carried, the horizontal distance of the same from the foundations of the Cathedral, and after agreeing on certain protective works to be carried out before the proposed excavations were commenced, we eventually agreed with you certain clauses for the protection of the Cathedral. In consenting to the disturbance of ground even in the situation as then proposed we were not without some misgivings, and in accepting the clauses which were finally agreed we were actuated by the desire not to interfere if possible with a work of great public importance. We were influenced, too, by the fact that the proposed excavations for the tramway subway would only affect that part of the Cathedral foundation which carries the least weight and is most secure.

When you inquire what my views would be as to the possible damage to St. Paul's if the subway were constructed nearer to the south side of the Cathedral, I presume you have in your mind the construction of a tramway under St. Paul's Churchyard from the point about opposite to the centre of the south transept window eastwards and round the east end of the Cathedral. I have no hesitation in saying that from an engineering point of view I should regard the carrying out of such a proposal as certain to cause the most serious damage to the structure of the Cathedral. The main dome is, as perhaps you know, carried on four main corner piers, in addition to eight intermediate ones. The four piers on the north side have settled very little. In every case the piers carrying the south segment of the main dome have settled considerably more than any of the others. The south wall of the west transept has developed serious cracks, and there has been a general movement or draw of the whole structure towards the west and the south. This is evidenced by numerous cracks in the building, and by the fact that the south wall of the building is already out of the vertical. Generally I regard this part of the Cathedral as already being in a state of comparatively unstable equilibrium, and I should regard a far less serious disturbance of the subsoil than that which would be involved by the construction of so large a work as a tramway subway as close to the south wall of the building as I understand is proposed as entirely unpermissible in the interests of the security of so important a public structure as the Cathedral.

Reconsideration by the Select Committee.

Mr. Honoratus Lloyd, K.C., on behalf of the Corporation, pointed out, with regard to the suggestions appended to the architects' report, that the second recommendation was already within the limits of deviation, whilst Nos. 1 and 3 were improvements which the Corporation had in contemplation and would no doubt be carried out.

Professor Beresford Pite, giving evidence against the Corporation scheme, said his first objection was that the proposed wide thoroughfare did not combine architecturally with the great monument of St. Paul's. There was a want of definite architectural relationship between the great causeway and the great building. His second objection was rather to the aspect than to the plan. The aspect of St. Paul's was an architectural crown to the City and an asset of great value. What they had to consider was the opening out of a new view of St. Paul's as an artistic possibility. As to a "skew" bridge, he did not feel that there was an artistic objection to the relation of the piers beneath the bridge with the direction of the road upon the bridge.

Replying to Mr. Forbes Lankester, K.C., Professor Pite said that he approached this matter mainly from the artistic point of view—as to the best means of showing the great monument of St. Paul's in an improved aspect. He thought large sums of money should be spent in order to open out the Cathedral generally.

Further (replying to the Chairman) if it was a question between tramways and St. Paul's he would undoubtedly say, "Whatever you do, do not take the risk. St. Paul's is worth more to us in centuries than the tramways are in generations."

The Chairman mentioned that in reply to a communication he had sent asking whether the R.I.B.A. would like to give evidence at that inquiry, he had received a letter, dated 4th July, written at the request of the President and Council of the Royal Institute, stating that :—"The announcement of the Corporation appointing three eminent architects to advise them on their proposals entirely meets the view of the Royal Institute. Now that these gentlemen are appointed the Institute has no further views to express in the matter."

Asked whether he agreed with this action, Professor Pite said he did entirely. The Corporation having consulted architects of sufficient eminence to advise them, the Institute could not and would not challenge as a matter of personal opinion the position of any of its members.

Sir William Emerson, giving evidence, said that in his opinion it would be almost impossible to make an architectural monument of a "skew" bridge. A bridge of that sort could be constructed of masonry, but the primary difficulties of designing would be so great that it would probably result in the end in its being built of steel or reinforced concrete. As to the vista of St. Paul's which would be opened up by the adoption of a scheme on the lines put before the Committee by Mr. Pite, he thought it would be going out of the way to make a strained effect. A great deal of the mystery and charm of St. Paul's would be destroyed by a long approach.

Mr. T. E. Collcutt, examined, said his objection to an 80-foot roadway leading up to the south transept of St. Paul's was that on either side of the new roadway there would be buildings at least 80 feet high, and to get a proper view of the dome and a proper effect of the vista the whole of the dome should be disclosed. It would be necessary for the road from Queen Victoria Street, for instance, to the south transept to be at least 150 feet or 160 feet wide to get a proper view of the transept and dome of the Cathedral. He did not like the ideal of the new vista opened up by the Corporation proposal ending in a view of an oyster shop. A modern building, designed for the purpose of ending the vista, should be erected.

Dr. J. J. Burnet said that if the bridge was built, as the Corporation proposed, leading up to the east end of St. Paul's, it would give anybody approaching the Cathedral the idea that it stood upon a hill, and that was why he approved of the route.

The inquiry was resumed on the following day, when evidence was given by Mr. Fitzmaurice, Chief Engineer to the London County Council, Mr. Somers Clarke, late Architect to the Dean and Chapter of St. Paul's, and Mr. W. E. Riley [*F.*], Superintending Architect to the L.C.C.

The Committee having consulted in private, the Chairman announced that they had come to the conclusion that the scheme for the construction of the proposed new bridge, including the approaches thereto, was both in respect of architectural design and convenience of traffic the one best adapted to the public needs, and best suited to the character of the site, and they would report accordingly to the House.

Debate on the Third Reading.

The following is extracted from the report in *The Times* of the 19th inst. :—

The motion for the third reading having been put.

Mr. Dickinson (St. Pancras, N.) moved that the Bill be read a third time on that day three months. He said the scheme as it had been presented to the House had from the beginning been on much too small and narrow a scale. It emanated from the brain of the chairman of the Bridge House Committee of the City Corporation, and it had been pushed forward without a really full public inquiry and the acquisition of the general views of the public. He could conceive of no other city in the world setting to work on such a great improvement in the way adopted by the Committee of the Corporation. The Corporation had misled the House and the public as to the amount of support the proposal had behind it. They stated that they had behind them the London County Council—that that Council had sent their Chief Engineer to support it. Literally that was true. A Committee as a matter of urgency allowed the Engineer to give evidence, but until last week no authority was given by the Council for such a purpose. When one looked into the reports of the County Council it did not appear that the Council as a whole had ever considered the scheme or given its authority to it. All that the Council had concerned themselves with had been the question of how much money they should contribute to the widening of the street east and north of St. Paul's; they had never given any attention to the question as to whether that scheme was the best that could be introduced. He submitted that the House had not got before it anything that could be considered a complete scheme, nor any guarantee whatever that the linking-up of the tramway service north and south would come about. No such linking-up of the tramways could take place except at very great expenditure, which would fall on the London County Council and the ratepayers. The House had no materials to enable them to come to a conclusion as to whether the scheme before them was really the best scheme. Personally he doubted very much whether it was wise to bring the great north and south traffic through the very heart of the City. It would be very much better if the slow traffic went round and avoided St. Paul's. The Committee had not heard any real criticism of the scheme from the public point of view, and the second inquiry had not withdrawn his objections. He criticised the policy of asking the three architects to give evidence before the Committee as additional witnesses, and urged that these three gentlemen construed the words "the scheme" as meaning the official scheme of the Corporation, or any alternative scheme for a bridge to open out at or near St. Paul's. The House had not taken such a narrow view of the issue, and he asked them to send back the Bill in order to see whether the Corporation could not produce some scheme more worthy of their reputation. If there was a better scheme it was worth the delay of another year to obtain it.

Mr. Grant (Cumberland, Egremont) seconded.

Mr. Morton (Sutherland), speaking for the City Corporation, said that, so far from acting with undue haste in the matter, they had had the question of providing extra bridge accommodation before them for ten years. In selecting Sir William Emerson, Mr. T. E. Collcutt, and Dr. J. J. Burnet to make a report the Corporation had sought to get some eminent gentlemen who had not openly expressed any opinion on the subject. They had now received a letter from Mr. Leonard Stokes thanking them for the very straightforward way in which they had dealt with the question. That showed that those who had been their first critics were entirely satisfied with what the Corporation had done. His own opinion was that their scheme would show up the dome of St. Paul's as well as any other, and the "vista" scheme would cost two millions more money. They had not got that money, and they would have to borrow it—a course which they would not think of taking.

Mr. Hayes Fisher (Fulham) said, though he was not authorised to speak for the County Council, he would like as a member of that body to commend this Bill to the House. This was the first time that the City Corporation and the London County Council had ever entered into an agreement for a great London improvement in connection with their traffic, and he should be sorry if the agreement were overborne. They had, too, an undertaking from the Corporation that they would aid in promoting a Bill if ever it was sought to join the tramway systems across this bridge. He was sure they were all equally desirous of seeing beautiful things in London, but there was proof that beauty had been considered as well as traffic arrangements, and they were informed by three eminent architects that this was a very good scheme from the architectural point of view. The evidence was overwhelming in favour of this scheme. Hon. gentlemen ridiculed the idea of a million or two being added to the expenditure, but if the House was able to force on the Corporation a more expensive scheme he could assure them on behalf of the ratepayers that the County Council would not be willing to increase their proportion of the contribution to the cost.

Mr. S. Collins (Lambeth, Kennington) said that the only argument presented against a great national scheme was a matter of an additional £2,000,000. They spent nearly as much on a Dreadnought, which was obsolete

in ten years, and here was a scheme that would last for ages. They ought to rise to the occasion and reject the Bill.

Mr. Mooney (Newry) said that the hon. member for St. Pancras complained that the London County Council and the City were not in earnest with regard to the tramway scheme. He had never yet known an undertaking given by any responsible body before a Parliamentary Committee to be broken, and the Corporation of the City told the Committee that there was an agreement between them and the County Council with regard to the tramway. The hon. gentleman opposite said that the Committee had simply reaffirmed the Bill. That was not the case. Immediately after the House had come to a decision he instructed the clerk to the Committee to invite the Royal Institute of British Architects to assist the Committee by giving evidence concerning the alternative scheme; but as soon as the names of the eminent architects who had been consulted by the Corporation were published the President of the Institute wrote that the appointment of those gentlemen as advisers met the view of the Royal Institute, and that body had no further views to express. In regard to the question of traffic as affected by the scheme, he preferred the judgment of the Commissioner of the City Police and the Assistant Commissioner of the Metropolitan Police to that of Professor Beresford Pite. The House of Commons had a perfect right to throw out this Bill, but if the House did so it would do harm to the representatives of the City and to traffic facilities. The House ought to have some reliance on the people to whom they deputed the duty of considering the details of the scheme. Those details could only be properly considered with plans and explanations of witnesses. The House of Commons, with the best will in the world, might come to a wrong decision if members formed their opinions on *ex parte* statements by people who had not the facts before them. The Committee had examined experts, and had considered the proposal from an architectural and traffic point of view, and he asked the House to pass the Bill.

Mr. Essex (Stafford) expressed the conviction that no line of tramway ought to be carried into the subsoil of the hill on which St. Paul's stood while that structure was in the comparatively unstable state of equilibrium in which it was now described as being. They had to make up their minds that on whatever lines this traffic question might be solved, the tramways must travel upon the surface. That would lay on them the necessity of providing a wider approach and thoroughfare than that which was provided by any scheme which had been brought before them. The London Traffic Commission laid it down as a necessity in dealing with the traffic of London that no thoroughfare of first-class importance should be less than 140 feet in its surface width. He was surprised that no reference had been made in this debate to the important letter which appeared in *The Times* of 10th June pleading for an assurance that this great opportunity for increasing the architectural beauty of London should not be missed. That letter was signed by Sir Ernest George, Sir George Frampton, Mr. Reginald Blomfield, Sir John Sargent, Sir L. Alma-Tadema, Sir Thomas Brock, and Mr. John Belcher. We had been derisively called a nation of shopkeepers. If this scheme passed we would deserve the title to the full.

Mr. Balfour (City of London) said the hon. member who had just sat down objected to this scheme, not because there was a better one or because the House of Commons desired a different one, but because he thought there was to be found in the limbo of possibilities something which was more suited to the dignity of the Metropolis of the Empire than the scheme which had been dealt with by the Committee upstairs. He hoped the House would feel that it was impossible to defer a settlement of this important question until every human being was satisfied, until every scheme had been discussed from every point of view. They had to deal with the matter as practical men, and they had to deal with it from the point of view of finance—not the most important, but still an important consideration. One hon. gentleman said that this was an Imperial matter and they ought to deal with it in an Imperial manner, but he did not suggest that the Chancellor of the Exchequer should find the money. This was a London question, and though London should never be oblivious of its great position as the Metropolis of the Empire, to say, as the hon. gentleman said, that £2,000,000 did not matter was really to ask the House of Commons to treat the ratepayers of London in a manner which he would not dare to venture to treat the ratepayers of any other part of the Kingdom. As regarded traffic, he felt he could not say anything of great value to the House. But he might be allowed, perhaps, to endorse what fell from the Chairman of the Committee when he said that he and his colleagues had examined all the details in a manner which it was impossible to present to an Assembly like that and had studied the question in all its complexity, and that the judgment they had passed, whether it was good or bad, must be better founded than the judgment of an Assembly which had not heard the evidence and which could only deal with the very broad issues which were laid before it. What moved the House to refer this Bill back to the Committee was not whether this was a good or a bad way of attaining what they all desired, which was some better means of communication between the North and South of London. It was the æsthetic side of the question—that and that alone. If it had not been for the question of the beauty of the Metropolis he did not believe there would have been a single voice raised in the House when the Report came back from the Committee. He had often pleaded in that House for a wider and broader consideration of this question of the æsthetic beauty of London. Some of the inartistic parts of London were a perfect scandal. An enormous amount could be done to remove some of the eyesores which utterly disfigured some of the finest sites of the Metropolis. Much more could be done by removing the atrocious iron bridge over Ludgate Hill than by many more expensive schemes. He agreed that while London gained by the evidence of natural development everywhere visible they erred undoubtedly in not having sufficient of those vistas which were perhaps carried to excess in some modern towns. While they should have other opportunities of improving the architectural street vistas, he did not think that end would be obtained by having a bridge diagonally across the river. The House had by a majority referred the matter back to the Committee, the Committee had reconsidered it and had called architectural experts, who before they gave evidence received general approval as competent persons to deal with the problem. The Committee had dealt with it and had given their conclusions to the House again. While he agreed with the Chairman of Committees that the House was free to deal with the matter as it liked, he did not think they should reject it after the whole matter had been sifted from the artistic point of view. The House was not naturally an artistic body, and after all the investigations to which the matter had been subjected they ought not on the third reading to reject a scheme which would be a great convenience to the public of London.

The closure of the discussion being agreed to, the House divided, and there voted for the third reading 271, against 104. Majority for, 167. The Bill was then read a third time.

Some further Suggestions.

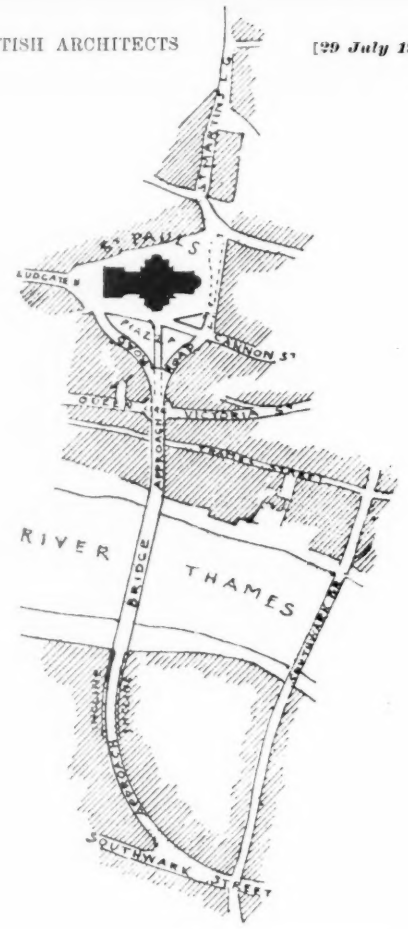
From Mr. R. W. COLLIER [*F.*], writing under date of 30th June :—

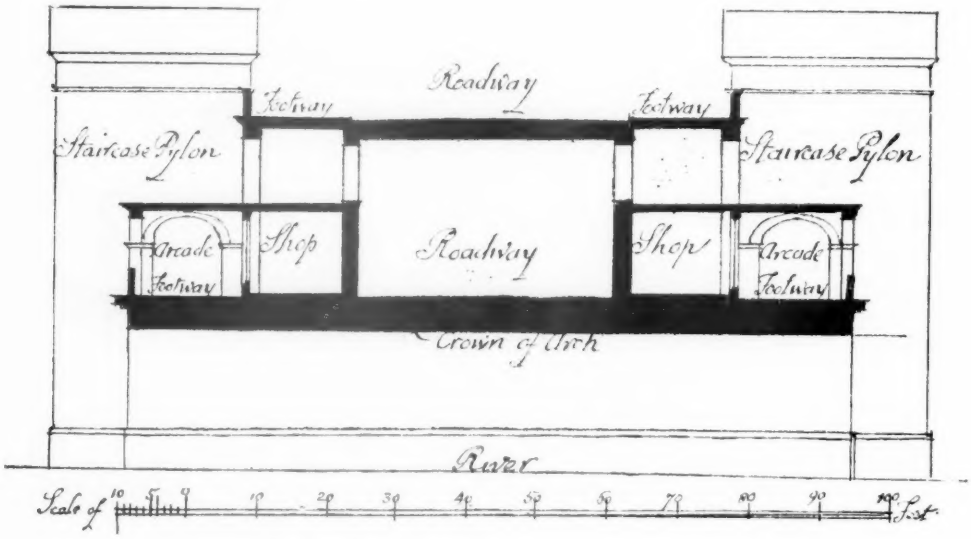
So far as a victory has been won by the Institute in obtaining the recommittal of the Corporation of London (Bridges) Bill, all those who are concerned for the architecture of London have reason to congratulate themselves. But the regret remains that the Corporation should have required to have pointed out to them the claim of architects to be consulted when the question is nothing less than an important piece of town planning. The problem to be grappled with is one which, if it is to be satisfactorily solved, will probably constitute the initial stage of a town planning project for the City of London which will have very far-reaching consequences.

Whatever may be said of the proposed new thoroughfare and Bridge, they doubtless afford an opportunity for opening up St. Paul's, although what is known as the alternative scheme suggested by Professor Beresford Pite can hardly be regarded as more than a somewhat crude suggestion even from an architectural point of view.

There is no reason why an approach road should not be made on the axis of the transepts, but this need not involve the obvious inconvenience of bringing the traffic right up to the cathedral as indicated on the alternative scheme above mentioned. Such an attempt to solve the problem is only introducing another difficulty.

What is surely required for the purpose of satisfying practical and architectural demands is that the approach road should open out on to an enlarged Churchyard or public place which should afford an unbroken thoroughfare past the cathedral and a full view of it ; securing not vista alone with





merely the transept and the dome at its extremity, but rather the whole side of the building.

It is suggested, then, that the approach road should be on the axis of the transepts to within say 500 feet of the cathedral, and bifurcate from that point at equal angles towards the east and west ends of the building; the intervening space between such branch roads being laid out as open space. But the question of approach is in the present case by no means the only one to be settled. It is one in which difference of level will materially affect the planning. The cathedral stands some 25 feet higher than Queen Victoria Street at a point due south of it, and it is very desirable that the Churchyard should be reached by a practically level approach. What an opportunity presents itself for designing a bridge in two stages!—the lower level lined with permanent shops or stalls and containing a roadway between them, and also wide footways beneath arcades between the shops and the parapet. This lower stage of the bridge would terminate at the level of Queen Victoria Street. The upper stage would be continued on over that street and terminate at the level of St. Paul's Churchyard by the bifurcating roads above described. The intervening space between these roads would obviously be falling land. Across this space, centrally with the transept, it is suggested a secondary approach might be made, as a continuation of the lower stage of the bridge on the other side of Queen Victoria Street, which would serve as a by-pass along which lighter traffic could travel.

Just before the bridge approach would cross the Thames, it might, without injury to the general effect, be given a slight bend, and thus allow of the bridge being carried straight across the river instead of spanning it on the skew.

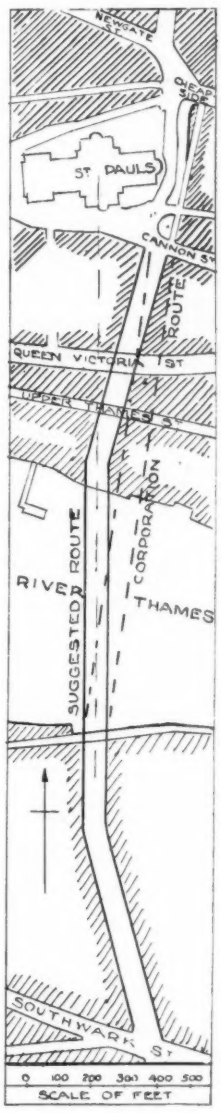
The removal of the buildings on the east side of the Churchyard proposed to be carried out by the Corporation would be a great improvement, whatever scheme were adopted. The space on the south side, above suggested as a part of the scheme, is at present occupied by warehouses which would be well away, and a more proper place assigned to them than hard by the cathedral.

The cost of such a scheme as above indicated would obviously be considerable; as a set-off against this there is no doubt that the sites for properties with frontages on the two approach roads would command an enhanced value.

South of the river the approach to the bridge might be laid out on a quadrant, forming a junction with Southwark Street, near Southwark Bridge Road. In this approach (probably along the centre line) an inclined road would be necessary, which might be of a very easy gradient, to enable traffic to reach the upper stage of the bridge.

From Mr. HARRY S. STEWART, *Licentiate*:—

The scheme here put forward has always seemed to me to offer satisfaction both from an architectural and from a traffic point of view. A vista is desired terminating in St. Paul's; carry the bridge across axially with the dome. Direct communication must be provided; take the road straight from the north bank to pass the eastern end of the cathedral. I think it will be found that the rise from the north shore is such that to a person crossing the bridge the greater part of St. Paul's would be visible above the buildings between Queen Victoria Street and St. Paul's Churchyard. The scheme could be devised so that no buildings between the river and Queen Victoria Street would appear above the level of the bridge; the vista across the bridge would be terminated near the eye level by a façade in Queen Victoria Street and above that by St. Paul's. Although the lowest portion of the cathedral would not be disclosed, yet the effect of the great mass of the dome towering above the nearer buildings would certainly be much finer when seen axially with the bridge than when seen on the skew as it would be in the scheme which the Corporation propose; while the suggestion here put forward ought to meet the genuine objection to an awkward bend in the traffic route on the schemes which show the bridge line carried straight up to St. Paul's. The annexed sketch illustrates one of several routes which would carry out this suggestion.



Mr. R. S. Lorimer, A.R.S.A. [*F.*], of Edinburgh, and Mr. W. Goscombe John, R.A. [*H.A.*], have received the honour of Knighthood.

Count Plunkett [*H.A.*] has been elected President of the Museums Association.

Special Examination of Licentiates to qualify for Candidature as Fellows R.I.B.A.

The question of establishing the Examination required by Clause 2 of the Supplemental Charter to be passed by Licentiates who being otherwise qualified desire to be admitted to Fellowship of the Institute has been for some time under consideration by the Council. The matter having been referred to the Board of Architectural Education a scheme has been drawn up which has received the approval of the Council, and arrangements are in progress for holding an examination at an early date.

The candidate will be required to submit for the approval of the Council working drawings of one or more of his executed buildings, which may be supplemented by photographs thereof, and by original sketches or measured drawings of actual work. Should the work so submitted be, in the opinion of the Council, of sufficient merit, the candidate may be exempted from any further examination. Should the work so submitted be, in the opinion of the Council, inadequate, his application will not be further entertained. If the drawings submitted are approved by the Council, the candidate will be required to submit himself to an examination which will be held on the premises of the Royal Institute of British Architects, or elsewhere, as may be appointed by the Council of the Royal Institute.

Ten days before the examination is held a list of subjects will be issued to all candidates, and from this list each candidate will be required to select one subject, and to announce to the Secretary of the Royal Institute, five days before the examination, which subject he selects. When the candidate attends at the appointed place of examination, he will be furnished with particulars of the selected subject, and he will have to prepare a set of working drawings of the subject, and such details as may be required, together with full descriptive notes. The candidate will also be required to write a short paper or report on a subject previously selected by himself and approved by the Council. Four days will be allowed for the examination, and the candidate may be required, at the option of the Council, to attend subsequently for an oral examination on his papers. Candidates must provide their own drawing-boards and instruments. The fee for the examination will be six guineas, which sum must be sent to the Secretary R.I.B.A., with the candidate's announcement of the subject which he selects. If the candidate fails to pass the examination the fee will not be returned to him, but he will be allowed to sit for one subsequent examination without payment of any further fee.

Should a candidate be admitted and pass, he will be qualified, subject to Section 8 of the Charter, for candidature as Fellow.

Should a candidate not be passed by the Council he will be informed of the fact, but the names of unsuccessful candidates will not be announced or published.

Competition for the new Australian Capital.

The Government of the Commonwealth of Australia invite competitive designs for the laying-out of the Federal Capital City, and offer premiums as follows :—

For the Design placed first . Premium, £1,750.
For the Design placed second Premium, £750.
For the Design placed third . Premium, £500.

The conditions under which designs are invited, together with information, particulars, plans and instructions, may be obtained at the Office of the High Commissioner for Australia, London.

Designs must be delivered to the Department of Home Affairs, Melbourne, Australia, by the 31st January 1912.

The Council of the Institute of Architects of New South Wales have addressed to the Council of the R.I.B.A. a letter calling attention to the unsatisfactory nature of some of the conditions in the above competition, notably those relating to adjudication and premiums offered, and to the final decision being in the hands only of the Minister for Home Affairs. The Council of the New South Wales Institute, in conjunction with the other architectural societies of the Australian Commonwealth, have already protested against the attitude of the Government in regard to the competition.

The following clauses of the conditions are quoted for the information of members :—

"12. The designs delivered and admitted to competition will be submitted to a Board consisting of—

An engineer ;
An architect ;
A licensed surveyor ;

appointed by the Governor in Council for investigation and report to the Minister."

"14. The Minister will adjudicate upon the designs admitted to competition after they have been submitted to the Board, and such adjudication will be final and without appeal."

"18. The premiated designs shall become the property of the Government for its unrestricted use, either in whole or in part. Any claim for further remuneration by one or by all of the authors or their assignors or legal representatives will not, under any circumstances, be recognised."

"23. The Government by its own officers will give effect to the adopted design."

The Government further, within two months of the date of adjudication, becomes entitled to call for, and to be furnished with, additional information, including such elucidating plans, sketches, and reports as it may be advised by the Board referred to in clause 12 are requisite. The aforesaid premiums cover the cost of supplying the additional information, and the Minister will not recognise any claim for payment beyond these amounts.

A deputation from the Council of the Institute waited upon Captain Collins, who is acting for Sir George Reid, High Commissioner of the Commonwealth in London, last Thursday, and laid before

him their views upon various points connected with the competition. It is hoped that as a result the High Commissioner will be in a position to make such representations to his Government that the unsatisfactory conditions will be revised and the competition placed upon a more equitable footing.

Council Appointments to Standing Committees.

The following appointments to the four Standing Committees have been made by the Council under By-law 51 :—

ART.—H. P. Burke Downing [*F.*]; Professor W. R. Lethaby [*F.*]; S. S. Reay [*F.*]; H. Heathcote Statham [*F.*]; Sir Aston Webb, C.B., C.V.O., R.A. [*F.*].

LITERATURE.—Francis Bond, F.G.S. [*H.A.*]; J. D. Crace, F.S.A. [*H.A.*]; Theodore Fyfe [*F.*]; A. R. Jemmett [*F.*]; Andrew T. Taylor [*F.*].

PRACTICE.—Walter Cave [*F.*]; John Hudson [*F.*]; F. W. Marks [*F.*]; J. B. Mitchell-Withers [*F.*]; H. A. Satchell [*F.*].

SCIENCE.—E. R. Barrow [*F.*]; J. P. Clark [*F.*]; J. E. Franck [*F.*]; J. H. Markham [*F.*]; H. A. Saul [*F.*].

Exhibition at University College: Proposed London School of Architecture.

The President of the Institute, Mr. Leonard Stokes, formally opened the Architectural Exhibition which has been held during the past week in the Science Library at University College, Gower Street. The exhibition comprised the drawings made during the session just closed by the day students at University College who are taking a two or three years' certificate or degree course, and by students attending the evening course of design, the cost of which is defrayed by the Carpenters' Company.

Professor F. M. Simpson [*F.*], the Professor of Architecture at the College, in explaining the arrangement of the exhibits, said that the drawings submitted by Mr. E. Unsmann, one of the degree students for Part I. of the B.A. degree, showed the standard which they hoped students would reach by the end of their third year, though he doubted whether the same high standard would be reached by the general body of students for some years to come.

Mr. Stokes, in declaring the exhibition open, congratulated Professor Simpson on the excellent standard of the work. The ladies' work, which was particularly good, struck him with amazement. It was proposed to institute a higher course of architectural training at the College. The establishment of such a course would meet a long-felt want. Many opportunities for learning were provided for the younger students, but they had not provided instruction in the higher branches, such as town-planning, to the extent that they ought to do. The advanced course which the College was now instituting would be an interesting experiment, which he had no doubt would prosper.

Dr. Gregory Foster, the Provost, in moving a vote of thanks to Mr. Stokes, said it was proposed to institute the new course, which would be one in advanced academic design, under the able guidance of Dr. J. J. Burnet, A.R.S.A., next year. But they were in need of additional accommodation. A building originally intended for the bursar's house had been made to serve the purposes of the architectural students, but it was quite inadequate. The Senate of the University of London had come to the conclusion that the needs of London and the country generally in regard to architectural education would be better met by organising one strong school of architecture rather than by maintaining two relatively weak ones—one at University College and one at King's College. It was proposed, therefore, when the funds were forthcoming for a larger building, to transfer the Department of Architecture, which had hitherto been at King's College, to University College, and house it all in one building. That would mean that Professor Elsey Smith and his staff at King's College would join Professor Simpson and his staff at University College. It would give them a strong staff, and he predicted success for the venture.

The Glasgow Institute and Architectural Training.

The Council of the Glasgow Institute of Architects has issued the following memorandum to its members on the subject of Architectural Training :—

The Council has had under careful consideration for some time the important subject of Education, with special reference to the co-relation of Office Apprenticeship with the course of study provided by the Glasgow School of Architecture. While recognising that the former must continue, as heretofore, to form the essential basis in the preparation of the young architect for his future work, the Council appreciates the advantage, and, in most cases, the necessity of combining with this his attendance at the classes of the School, leading up to the Certificate and Diploma granted by that Institution.

At the request of the School Authorities, delegates from the Council were appointed to discuss with them the matter in all its bearings, and a Special Committee was also appointed to consider their Report, and to formulate a scheme, which, while giving as much latitude as possible to individual arrangements as between employers and their apprentices, would provide for a definite allocation of the latter's time to school study.

Emphasis has been laid throughout by the School Authorities on the necessity for (1) a fairly high standard in general education before the Office or School is entered; (2) a certain proportion of the School work being taken in the form of day classes owing to the otherwise undue extension of the curriculum, and the severe tax on the student if the evenings alone are devoted to this side of his work; and (3) that one session (September to May) of whole day work, or two sessions of half-day work (either forenoons or afternoons for a like period), should be taken at, or near, the commencement. This, followed by evening classes during the remainder of the apprenticeship, with a return to day work at, or near, its close, would enable the student,

with another year or more of School and Office work, to take his "Course Certificate," qualifying him, with further study and experience, for the Diploma, all as indicated in the alternative outline schemes appended.

In the view that such an arrangement of study is in general desirable, the Council has expressed its concurrence in the case at least of all entering upon the work with the intention of becoming practising architects, and now makes the following recommendation to the members of the Institute regarding the terms on which future apprentices or pupils should be engaged:

I. That apprentices and pupils shall be required, before beginning their training, to have obtained, as a minimum, the Leaving Certificate of the Scotch Education Department, or its equivalent; and, in cases where that is not found possible, that they shall undertake to attend the Special Architectural Class at the Glasgow High School until qualified to pass the Preliminary Examination for the Diploma of the School of Architecture.

II. That the apprentice or pupil shall come under obligation to attend the full course of study as set forth in the curriculum of the School of Architecture, at least, up to the taking of the "Senior Certificate."

III. That the employer shall grant facilities for such attendance, to include during the term of apprenticeship, and in the course of the first two years thereof, not less than one session (September to May) of full day classes, or two sessions of half-day classes, with another session of day classes before its close, where possible.

IV. That the term of apprenticeship be six years, to include the time spent in the before-mentioned School day classes; that it should be entered upon following on the close of the student's general education, and before enrolment in the School of Architecture; and that, except for special causes, the engagement should not be broken, or the apprentice transferred from one employer to another during the term in question.

In making these recommendations the Council in no way implies that they should be obligatory on the members of the Institute, but they are put forward after a full study of the question, in the belief that, if followed as opportunity permits, they will be found to be to the ultimate benefit alike of the architect employer, of his assistants, and of good architecture in our midst.

Alternative Outline Schemes showing suggested Allocation of Time as between Office and School during Apprenticeship.

A.

OFFICE.	SCHOOL.
2 years, including	1 session (9 months), full day, junior.
3 years, ,,	3 sessions evening classes, junior.
1 year, ,,	1 session full day classes, senior.

B.

2 years, ,,	1 session half-day classes, junior. (Afternoon or Forenoon.)
4 years, ,,	1 session, half-day classes, junior. (Afternoon or Forenoon.) 3 sessions evening classes, junior.

C.

2 years, ,,	1 session, full day, junior.
4 years, ,,	4 sessions evening, junior and senior.

After the Apprenticeship is concluded under Scheme A one additional session of full-day classes, and under schemes B and C two such, or a proportionately longer period of day and evening classes, are required to enable the student to obtain the "*Course Certificate.*"

This course, followed by two years' practical experience as draughtsman, with further (optional) School study, will qualify the student to enter for the *Diploma in Architecture.*

The King Edward Memorial.

At a meeting of the General Committee of the King Edward Memorial Fund at the Mansion House on the 17th July, the Lord Mayor stated that, after visiting 30 sites, the Advisory Committee had come to the conclusion that the Piccadilly end of the Broad Walk in the Green Park would be the best adapted as a site for the Memorial, and that this choice would also be approved by the King, Queen Alexandra, and the Government. They would be prepared to recommend the erection of another statue or memorial in the East-end. After considerable discussion, during which the Charing Cross site was warmly advocated, a resolution in favour of the Green Park site was carried, and the matter was referred to the Executive and Advisory Committees to select a sculptor and obtain plans and designs of the proposed monument. A proposal was brought forward that the Executive Committee should only select a sculptor after competition. The Lord Mayor objected, stating that the Advisory Committee, consisting of men of great eminence in the art world, held that if competition were insisted on it would exclude the best men in that branch of art. The monument should be designed by the most capable man. He promised that the question would be reconsidered, but asked the Committee not to tie the hands of the Executive.

The Committee have since resolved not to submit the Memorial to public competition, but to invite Mr. Bertram Mackennal, A.R.A., as sculptor, and Mr. E. L. Lutyens as architect.

Warning to Students going to Italy.

Mr. J. ff. Baker Penoyre, Secretary of the British School at Rome, writing to the Secretary of the Institute under date 1st July 1911, says:—

"I regret to have to inform you that it would be desirable to inform all students of art and architecture going to Italy this summer that they should, firstly keep to the North of Italy, and secondly make careful inquiries from time to time from such sources of information as the Consulates as to the health of any district where they may be going to work. I am afraid there is no doubt now that the health of the South of Italy, and Sicily in particular, is such that, apart from the troublesome question of quarantine, it would be unsafe to go there.

"It is not easy to draw a line between North and South Italy, and as at present advised I do not consider the situation in Rome itself grave as yet."

Heating and Ventilating Engineering.

The University of London has started a Course in Heating and Ventilating Engineering at University

College. The Course is intended for Students having a sound elementary knowledge of Mathematical Science, and intending to specialise in the practice of Heating and Ventilation. The full Course comprises a Preliminary Public Course of Lectures on "The Real Nature of the Problems in Heating and Ventilation awaiting solution by the Engineer"; a Course of Lectures on the detail of the subject; a Course of Laboratory Instruction; Experimental Research for those Students competent to undertake original work under the direction of the Lecturer; the Drawing Office. Students taking the full Course will be required to translate selected papers from French and German into English. Students who have not already a good knowledge of French and German are advised to attend Courses in the Departments of French and German, so as to be able to read those languages with ease. At the end of the Second Term, a Tour in Germany will be arranged to inspect important installations there. The Lecturer is Mr. Arthur H. Barker, B.A., B.Sc., to whom application for further particulars should be made.

The late Mr. William Clinch Poole [*A.*].

By the death of Mr. W. C. Poole, of Wandsworth Common, S.W., another of the old class of Associates has joined the majority. He had been in failing health for some time. Probably no man had more to do with laying out building estates around London and the provinces. When I met him forty years ago, he was assistant surveyor to the Conservative Land Society, subsequently becoming surveyor to that and other societies emanating therefrom. Altogether about 200 estates have been under his charge. In his later private practice dilapidation adjustment formed a large part. He was, too, a most impartial and conscientious witness in cases of light and air claims. Among his architectural work may be mentioned the chapels of Battersea Cemetery, the grounds of which he laid out. Modest and retiring, he scarcely ever attended our meetings. His brother, Mr. Geo. T. Poole, is V.P. of the West Australian Institute of Architects.—EDWARD W. HUDSON [*A.*]

CORRESPONDENCE.

"Dr. Wren," "Mr. Wren," and "Matt. Wren" in Pepys' Diary.

To the Editor, JOURNAL R.I.B.A.,—

SIR,—In Pepys' famous diaries, there are numerous references to people named Wren, but of these only a very few seem to refer to Sir Christopher, who I suppose was at the time not knighted, and is referred to as "Dr. Wren" by Mr. Pepys.

I will take the last year of the Diary (1669) first into consideration under the date of 21st March ("Lord's Day"), where there are references both to a Mr. Wren (Secretary to the Duke of York) and to Dr. Wren; of the latter the entry is "Met Mr. May, who tells me the story of his being put by Sir John Denham's place, of Surveyor of the King's Works, who, it seems, is lately dead, by the unkindness of the Duke of Buckingham, who hath brought in Dr. Wren . . . which is an ill thing, though Dr. Wren is a worthy man. But he tells me that the King is kind to him, and hath promised him a pension of £300 a year out of the Works; which will be of more content to him than the place, which, under their present want of money, is a place that disobliges most people, being not able to do what they desire to their lodgings." Who is this Mr. May who was passed over? But in any case, seeing that Wren had been for eight years Assistant Surveyor under Denham, one fails to see the justice of Mr. May's plaint.

An interesting reference in the Diary appears under the date of 8th May 1669—"By-and-by also comes Browne, the mathematical instrument maker, and brings me home my instrument for perspective, made according to the description of Dr. Wren's in the late Transactions" etc. etc. I do not see any reference to this instrument in Mr. Weaver's interesting paper in the last number of the JOURNAL; I suppose the "Transactions" are those of the Royal Society. Another reference is under date of 1st February 1669: "To Mr. Streeter's, the famous history painter . . . and there I found him and Dr. Wren and several virtuosos looking upon the paintings which he is making for the new theatre at Oxford: and indeed they look as if they would be very fine, and the rest think better than those of Rubens in the Banqueting House at Whitehall, but I do not fully think so. But they will certainly be very noble." I find one other reference to Dr. Wren, and that is under date of 21st February 1666: "And anon he, (*i.e.* Lord Brouncker) alone with me, about the art of drawing pictures by Prince Rupert's rule and machine, and another of Dr. Wren's; but he says nothing do like squares, or, which is the best in the world, like a dark room."

The other numerous references in the diaries are to "Wren," "Mr. Wren," and "Matt. Wren"; the first two seem undoubtedly to refer to one man—namely, the one that succeeded Sir William Coventry in September 1667 as Secretary to H.R.H. the Duke of York, afterwards James II. There had been some thought that Pepys himself would get the post, but he did very well without it.

The references to Matt. Wren extend from March 1666 to November 1668, and there seems reason to suppose that this is someone different from the above Mr. Wren.

Can Mr. Weaver throw light on these points? The Secretary Wren wrote a book in answer to Harrington's "Oceana."—Faithfully yours,

PERCY L. MARKS.

LINCOLN MINSTER.

By W. Watkins [*F.*].

To avoid a danger of this correspondence degenerating into differences over inches and fractions of inches, which in no way affect the general questions at issue, I hope I shall be excused from pursuing that kind of argument, except, of course, where the figures are vital to an important point of difference; for it is immaterial to our theory whether the building is 87 feet 2½ inches wide as measured by one person, or 85 feet 11 inches as measured by another, because the whole plan of St. Hugh's part of the cathedral, extending from north to south, and from east to west, when laid out from the single dimension of 86 feet on the principle previously described, fits in with the existing foundations as accurately as any plan could be worked to, even by the best builders of the present day.

It is also immaterial whether the arches of the dark panels in the false roof, formerly the centres of the narrow bays, spring at the same level as those of the windows at each side of them, or whether they are two feet lower as they are said to be. It is fortunate that attention has been directed to the springing of this arch and to its being so much lower than those of the adjoining windows. There seem to have been good reasons for the difference, and they are really favourable to our contention that the narrow bays had solid jambs and arches, whilst the wider bays had open spaces between the front and back arcades. The shafting and orders of the arch-mouldings of these panels or windows had necessarily to follow the solid jambs and arches against which they were set; and to bring the springing of the arch down to the level of that of the clerestory arcade with which it had to range, and at the same time to keep the apex level with those of the windows outside, the arch was required to be very acute and elongated, to the extent of two feet, as shown in bay A, fig. 22.

It is likewise immaterial to our theory whether or no these panels were originally windows, as we think they were, or were always panels (as suggested by others) to reduce the weight of the walls in which they are set, because in either of these cases the architectural features as described by us for the narrow and wide bays are adaptable to these panels and pigeon holes as they now exist (see drawing, fig. 21, in the Journal of the 27th of last May, and likewise the drawing accompanying this letter, fig. 22). It is not to be imagined that this drawing (fig. 22) has been made to show an actual restoration of St. Hugh's choir, but only an indication of a kind of lancet architecture that is suggested by the "pigeon holes," as we call them, and clerestory windows; and which could have been applied to the windows and the pigeon holes and the panels as they still exist. The triforium and clerestory being of equal heights gave, of course, a bad proportion to the interior, but it should not be forgotten that in the Norman and even in its short-lived Transitional style these stages were of equal dimensions, and it is not, therefore, unreasonable to suppose that in this first development into the lancet style of architecture the former practice should have been followed. These proportions, however, lack dignity, and I suggest it was partly on that account they were altered by the reduction of the height of the triforium and the consequent increase in the height of the clerestory on adding the vaults.

The following capital letters refer to fig. 22:

(A) is one of the narrow bays, showing in dotted lines the arch of one of the dark panels, now above the vaults, with its springing two feet lower than those of the windows at each side of it (as Mr. Bilson says it is) and treated as a panel and not as a window; although with the middle shaft and dressings omitted it could have been a window, as we suggest it was.

(B) is another of these narrow bays, showing a similar panel, but treated as a window with the arch springing level with those of the other windows.

(C) is one of the narrow end bays, showing a treatment of a panel in the solid wall similar to that at the south-east corner of the choir clerestory, mentioned by Mr. Bilson as an insurmountable difficulty to our theory of wide and narrow bays.

(D) is one of the wider bays of the clerestory as it exists now, with the lines of the vaults marked upon it, showing also that peculiar ornamentation of trefoils and quatrefoils, which may be seen just above the front arches of the clerestory arcade; and likewise showing the arches which are crippled to give room for the vaults.

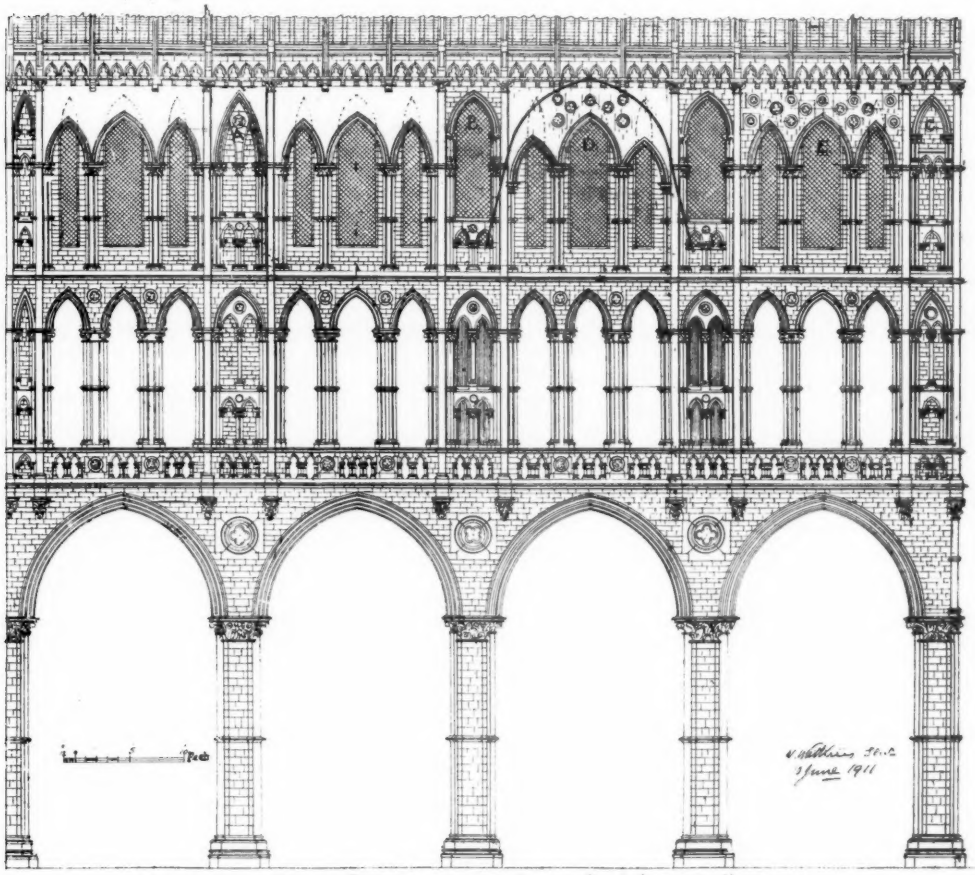
(E) is another of the wider bays showing this ornamentation extended to the full width of the space, showing also the front arcading as it probably was before the arches were crippled to make room for the vaults.*

The order in which the building was constructed, and the changes made in it during the first fifty years of its existence, must necessarily be somewhat obscure at this distance of time (now nearly seven hundred years), but I believe there is still remaining in the building sufficient evidence to enable an experienced and careful observer to trace that order.

As for ourselves, what we suggested and still believe is, that neither the face arcade of the walls of the choir aisle, nor the aisle vaults, nor the high vaults were contemplated when St. Hugh commenced his church; and that the present triforium

* It is not claimed that these bays were originally treated as shown here, for there may be a hundred better ways of dealing with them, but sufficient is indicated to prove that all the objections, of a practical nature, yet raised against our theory, are wholly met by either of the alternatives shown in these wide and narrow bays marked by the letters A to E, both inclusive.

arcades and the high vaults are not of St. Hugh's work but were afterthoughts, and were probably not constructed until the nave was practically finished ; and after the fall of the central tower in 1237. Briefly stated, that is what we set ourselves to prove, and all the remaining portions of our "Notes," which were so admirably set out and our theory explained in detail by Mr. Bond, consisted



CONJECTURAL INSIDE ELEVATION OF THE RITUAL CHOIR LOOKING NORTH
FIGURE № 22

of the reasoning process through which we passed to enable us to arrive at our conclusions ; and unless more reasonable explanations can be given for the existence in the present building of the features to which we have directed attention, and which led us in forming our opinions, than have yet been vouchsafed to us, I for one must remain obdurate.

There are still a few points of a general character which have been raised in objection to our views which may fairly claim our further attention; and first, respecting the string course at the clerestory sill on the east side of the central transepts, which ranges with that of the passage-way sill on the western side of the same transepts. From the fact that these strings now range with each other it is inferred that no transformation of the triforium such as we allege could have taken place in these transepts, because the lowering of the clerestory string at one side of the transept would have placed it below the corresponding string on the other side of the same transept. But this suggestion presupposes that the whole of these transepts was built up and finished, and the string course in question set, prior to the transformation which we state was made in the triforium arcade ; whereas it is recognised by all experts that St. Hugh's work in the west walls of these transepts does not extend higher than the string course in question (nor in

my belief even so high as that by one tier of windows), and that all above that string was built after St. Hugh's time.

The alteration of the triforium and the building up of the west wall of the central transept would therefore in all probability be proceeding together, or in immediate succession to one another, and the builders would in these circumstances be sure to fix these two strings at one and the same level. There is thus no ground whatever for the suggestion that the ranging of these two strings is an obstacle to our theory.

Then we are asked, if we are right in our theory respecting the ashlar walling in the spandrils of the vaults in the pockets in the false roof of St. Hugh's choir, which we say was not constructed for vaulting, how do we account for the ashlar in similar spandrils of the nave which was always intended to be vaulted? I have inspected these spandrils and the ashlar facing they are said to contain, and I confess to a feeling of surprise that an adverse comparison should have been made between this so-called ashlar work over the nave with that over the ritual choir, because there is no space for ashlar walling over the nave, owing to the surface being almost wholly filled up with small window slits and the solid tooled masonry which surrounds them. These slits are glazed in leaded lights, and their inside openings are about 1 foot 6 inches wide each, and the jambs between them and at their sides are about 1 foot 3 inches wide, as near as one can judge them without measurement. The widths of the spandrils in the pockets vary considerably, so that in the narrower spaces there are two of these openings, and in the wider spaces three and four respectively, as spaces permitted. These openings extend from just below the wall plate to nearly, if not quite, down to the backs of the vault webs, and some of them quite down to the bottom of the pockets. The openings and tooled jambs, head and sills surrounding them, occupy practically the whole spaces of the spandrils, and there is therefore scarcely any room left for rubble walling, and to have filled in with rubble work what little space there is in steppings at each side of these irregular jambs and under some of the openings would have made patchy walls, and have increased the cost of the work; hence the absence of rubble walling above the vaults of the nave. This work as it now stands is quite consistent with what I said in my former letter about the ashlar and rubble walling over the vaults of the choir and choir transepts.

The recent criticisms of our theory have been almost entirely of a negative character, and I trust, therefore, that I shall not be considered over-exacting in inviting constructive explanations of some of the points of evidence we have advanced in favour of our theory from those who dissent from our conclusions, for instance.

(1) If the present double arcade of the walls of the choir aisles was contemplated at the commencement of the building, and was not added to strengthen the walls for supporting the aisle vaults, as we say it was, why was the face arcade not bonded into that behind it, which would have made the wall much stronger than it is now, instead of being built separate and independent with a "knife edge" between them?

(2) If the aisle vaults were not afterthoughts but were arranged for from the first, why were no wall ribs provided for supporting the vault webs on the main piers at the choir side of the north aisle?

(3) If the triforium walls were originally intended to be as thick as they are now, why were they not poised over the centres of the piers which support them, like those of the nave and Angel choir?

(4) If the triforium walls were always intended to be the same thickness as they are now, viz. 4 feet 7 inches, why were the main piers which support them made only 2 feet 8 inches thick, and why was such bad construction perpetrated as making this walling to project over to one side only, to the extent of 1 foot 7 inches, and be dependent on the vault webs for support, unless, as we say, the thickening was an afterthought made to admit double arcades being constructed to the triforia and clerestories?

(5) If the pigeon holes and panels now visible in the clerestory passage-ways are not the remains of former triforium arcades and clerestories, as we suggest they are, what were they built for, what constructional or architectural purpose do they now serve, or ever did serve, and why were they grouped in bays and systematically arranged?

(6) If high vaults were contemplated from the commencement of the building, why were deeply recessed panels made in the main walls immediately behind the springers and conoids of the vault ribs, and the walls weakened at the very points where the heaviest and strongest walls were required to resist both vertical and lateral pressure from the heavy vaults they support? and why did the builders construct wall buttresses against the backs of these skin-thick panels, if these buttresses were not added at a late period, as we say they were?

(7) If the high vaults of the choir and eastern transepts are of St. Hugh's original work, and not of a later period as we assert they are, how does it happen that, contrary to all precedent, the leading moulding of all the diagonal vault ribs is the "three-filletted bowtell," which is a characteristic moulding of the Geometrical style of Gothic architecture, and which is seldom found in the lancet period, and then only in its latest phases?

(8) If the high vaults were always intended, which we do not believe, and the present clerestory arcade is original, as we believe it is, how is it that the side arches of these triple-arched arcadings are distorted and crippled, if they were not altered

and lowered to admit of the vaults being constructed ? (See figure No. 21, accompanying my letter in the JOURNAL of the 27th of last May, and also figure 22 accompanying this letter.)

(9) If, as we assert, the clerestory arcading was originally continuous in front of the dark panels above the vaults, having triple detached shafting, and a single order of arch mouldings of exactly the same thickness (11 inches) as those of the existing clerestory arcades at each side of them, and ranging with them, and having also ashlar-faced walls behind them ; what reasons are there for the assertion that it would be necessary to reface the whole of these walls after the stripping oft and removal of these independent shafts and dressings ?

(10) Then as to the central transepts, if high vaults in the central transepts were contemplated before the building was commenced, why were the piers of the main arcades at the east side of these transepts rebuilt, or cased and enlarged, at a later period than St. Hugh's time—as is evidenced by the fact that they have clustered shafts of two different styles of architecture, the round shafts being clearly of St. Hugh's time, but reinstated here probably from the original pier, whilst all the larger stone shafts are attached to the cores of the piers, with fillets 1½ inches wide down their front faces, and are therefore characteristic of the Geometrical and Curvilinear styles—if it were not for the purpose of providing stronger and more central supports to the thicker walls above them, and especially to carry the extra weight of the vaults, as all the piers of the choir (except one pair) were enlarged in a similar way ?

(11) If high vaults were always intended, why were the intermediate arches which cross the triforium gallery, and the pedestals that support them, not built into and bonded with the middle piers of the triforium arcade at one end and the outer walls at the other, if they were not later insertions ?

(12) If the experts are right in their opinion that the upper parts of the west walls of the central transepts are of later date than St. Hugh's time, would it not be consistent with our theory that the transformation of the triforium and the construction of the upper parts of these walls were continuous works, which would admit of the strings in question being fixed at equal levels ?

(13) If the clerestory walls of these central transepts from just beneath the window sills were not built up after St. Hugh's time, how is it that the intermediate buttresses outside the eastern walls were not made to rest on the cross walls in the triforium gallery, similar to those in the triforium gallery of the ritual choir, instead of being corbelled out from the outside face of the clerestory walls just above the lean-to roof of the triforium gallery ?

(14) If high vaults were contemplated from the first, and the clerestory walls were not built later than St. Hugh's time, why were any of the intermediate buttresses at the east side of the central transepts corbelled out from the external face of the wall immediately above the string which runs under the triforium gallery windows, instead of springing from the ground line like all the other buttresses of the building ? and why were the intermediate buttresses added after the lean-to roof of the triforium was constructed, unless it was to support the later constructed vaults ?

(15) If these clerestory walls and the upper portions of the west walls of these central transepts, together with the construction of the high vaults, are portions of St. Hugh's original work, why were the dark panels which exist in all St. Hugh's other work, and which are said to have been made to reduce the weights of the walls, altogether omitted above the vaults of these transepts ; and why were all the walls above these vaults, like all those of St. Hugh's other work, where they were rebuilt or refaced after St. Hugh's time, constructed and faced in rubble walling instead of ashlar, unless, as we say, they were built after it was decided to vault these transepts ?

The above fifteen points are selected from amongst many others of a similar character, every one of which, when reasonably interpreted, appears to us to lead up to and support our conclusions ; but if anyone can put a more reasonable interpretation upon them than we have done it will be heartily welcomed, for we are most anxious to solve the mystery which has been hanging over St. Hugh's work in Lincoln Minster for so many years. It is in no captious spirit that I put the matter in this categorical way, but rather in the hope of confining the discussion to the narrowest reasonable limits.

Books Received.

The English Staircase : an Historical Account of its Characteristic Types to the End of the Eighteenth Century. By Walter H. Godfrey. Sm. 4to. Price 18*s*. B. T. Batsford, 94 High Holborn.

The Practical Design of Reinforced Concrete Beams and Columns. By W. Noble Twelvetrees. 8vo. Price 6*s*. net. Whittaker & Co., 2 White Hart Street, Paternoster Square, E.C.

The Principles of Planning Buildings : an Analytical Treatise for the Use of Architects and others. By Percy L. Marks, architect. 3rd edition. Revised and enlarged, with many additional examples. 8vo. Price 12*s*. net. B. T. Batsford, 94 High Holborn.

Le Palais de Dioclétien à Spalato : Notice de M. Jacques Zeiller. Pamph. 8vo. Paris, 1911. Ch. Massin, éditeur, 51 Rue des Ecoles, Paris.

IIIe Congrès International d'Hygiène Scolaire. Royal 8vo. Paris, 1910. A. Maloine, éditeur, 25-27 Rue de l'Ecole-de-Médecine, Paris. 3 vols. :

I. Rapports, 750 pp.
II. Résumés de Rapports et de Communications. 500 pp.
III. Compte-Rendu : Communications, 1014 pp.

REVIEWS.

CIVIC ART.

Civic Art, Studies in Town Planning, Parks, Boulevards, and Open Spaces. By T. H. Mawson, Hon. A.R.I.B.A. Lecturer on Landscape Design at the University of Liverpool. Fo. Lond. 1911. 50*s. net.* [*B. T. Batsford, 94 High Holborn, W.C.*]

This handsome and beautifully appointed volume, dedicated to the Right Honourable John Burns, is substantial, but not very original or comprehensive. It goes over generally familiar ground, and most of the schemes commented upon are already commonly known to the professional student. The photographs and illustrations are largely old favourites, also the particular examples of Town Planning which Mr. Mawson describes are too often unrepresentative, and those with which he has had personal associations.

The present volume is supplementary to the "Art and Craft of Garden Making," by the same author, and is divided into four sections, well printed and illustrated, with a fine system of marginal notes and appendices. It was originally intended to pertain to landscape gardening, and the treatment of parks, gardens, and boulevards. It has, however, been expanded by its author also to embrace the theory and practice of Civic Art. In most of the schemes with which the author has been associated, such as those at Dunfermline, Bolton, Perth, Port Sunlight, Glyn Cory, etc., he is to be congratulated on having such able coadjutors as the late Mr. Dan Gibson, Mr. C. E. Mallows, Mr. Robert Atkinson, etc. Still, it is to be regretted that he does not show more representative examples of such schemes.

It is no doubt a sign of the times that the general public take an interest in such books, but the professional student will probably find more useful to him the many excellent works already published treating of the historical, sociological, scientific, and engineering aspects of this wide subject.

It is, perhaps, to be regretted that Mr. Mawson had not carried out his original intention of limiting the scope of his book to the treatment of landscape architecture in its application to parks, gardens, and boulevards. The chapter he gives us on park systems and open spaces is one of the most interesting. They are classified as, 1st, The Town Square; 2nd, the Small Recreation Ground; 3rd, The Public Park; 4th, Reservations; 5th, Connecting Parkways, Drives and Boulevards.

Mr. Mawson points out that most of our important parks and gardens, especially in great towns such as London, are isolated, and if it is desired to pass from one to the other we must generally do so through more or less sordid streets. He lays down also two recognised principles of park development, the "Radial" and the "Encircling."

An old town on an historical foundation usually starts from a congested centre, straggling out into the country along the routes of the highways radiating from it. It is on the unoccupied land between those highways that the radial system of parkways would naturally be developed. An encircling boulevard with parkway would afford a logical completion to such a radial system.

Whatever principles are adopted they are merely guides pointing out the general direction park expansion should take. The natural features, contours, etc., will inevitably lead to modifications, but a principle of park allotment is necessary, and a most urgent matter involved is that of providing arteries for fresh air.

Parks and parkways are, physiologically speaking, the lungs of the city. Mr. John Burns recently said that, "In fifty years London will stretch from Hayward's Heath to Northampton." Recent evidence shows that this is by no means the assertion of a visionary. Consequently, it is the more necessary to effect a compromise as soon as possible between the ideal and the practical, between what might be and what is now proposed. "With this in view immediate action should be taken under the Town Planning Act to prevent further encroachment on the routes to be used, remembering that every day that is lost in procrastination or in the formal business connected with the preparation of a scheme under the Act will make the problem more and more difficult and costly."

The book finishes with appendices showing the various trees, shrubs, and evergreens most suitable to Town Planting, with the soil they favour and the localities in which they should be planted.

DAVID BARCLAY NIVEN [*F.*].

LIVERPOOL SCHOOL OF ARCHITECTURE.

An exhibition of students' work of the School of Architecture of the University of Liverpool was held from the 5th to the 8th July. The Exhibition comprised measured work and designs of students of two years and over for the certificate in Architecture, and also work of first-year students. Throughout the designs a strong feeling of the American School is perceptible, while French influence permeates the whole. The designs are as a whole academic, good in proportion and feeling. Some of the work of first-year students was really remarkable, notably designs for a tramway shelter and a mausoleum by W. H. Thompson, and work by A. R. Sykes. An excellent set was shown in the examination design of thirty hours; those of W. E. Davies and H. C. Mason were especially worthy of inspection, the former showing French influence and the latter consisting of a rather severe classic composition. Turning to the two-year work, H. C. Mason had a very fine set of measured drawings of Blenheim Palace for the Travelling Studentship (a monumental work which we hope to see fully illustrated), and a measured drawing of a portion of the portico of St. Andrew's Church, Rodney Street. Mr. Mason showed also

a delightful design for the terrace and steps to a public building in a park, a good though severe design for a mausoleum, a design for a monument to Nelson in St. Paul's Cathedral illustrated by a clever perspective, and an excellent design for an approach to a riverside town. A design for a screen joining the wings of a public building was fair; also a design for a tomb of a man of letters. V. H. Hughes had a fine set of measured drawings of the Chapel of Trinity College, Dublin, and good sheets of details; also measured work of York Stairs, Charing Cross, and designs for a screen between buildings, a town house, and landing stage and monument. A. Shelmerdine had an excellent set of measured drawings of the Apothecaries' Hall, Colquitt Street, Liverpool, with details, and clever designs for a ballroom for a large country house and a car shelter. Ernest Gee, Holt Travelling Scholar, showed a beautiful set of drawings of the Musée Galliera, Paris; and from the British School at Rome came delightful sketches of a portion of the Temple of Neptune, Pæstum, and of the Porta Palio, Verona. E. C. Preston had also a fine set of measured drawings of the Apothecaries' Hall, Liverpool, together with a design for a tomb, a mausoleum, a landing place, a monument to a naval hero, and a town house. H. C. Bradshaw showed nicely coloured measured drawings of the Bank of England, Castle Street, Liverpool, one of Cockerell's finest examples. W. E. Davies had measured drawings of Trinity College Chapel, Dublin, The Lodge, Princes Park, Liverpool, and St. James's Chapel, Liverpool; also excellent designs for a monument and landing stage to a riverside town, a monument to a naval hero, a colonnade, and a town house. J. E. Chambers had some very fine measured drawings of the Ecole Militaire and the Palais de Justice, Paris, together with designs for a Cotton Exchange and some pleasing freehand sketches. J. Williams showed a successful set of measured drawings of Government Buildings, Victoria Street, Liverpool, a delightful building which also we hope to see reproduced; a clever design for a monument to Nelson suggested to be erected under one of the arches of the Nave arcade in St. Paul's, and some good designs for a landing place and a town house. Maurice Lyon was represented by a fine design for a church tower and a railway terminus on extremely satisfactory lines. There were also shown designs for a block of seven cottages for prizes of £25, £10, and £5 given by Sir W. H. Lever. Visitors were introduced to the Exhibition by two very attractive posters by H. C. Bradshaw. Altogether we were much impressed with the great advance made in the work generally and the uniformity of excellence in the style and taste displayed. Unquestionably Professor Reilly is to be sincerely congratulated on the life and vigour of the School.

T. E. Eccles [*F.*].

THE SUMMER EXAMINATIONS.

The Preliminary.

The Preliminary Examination, qualifying for registration as *Probationer R.I.B.A.*, was held in London and the provincial centres indicated below on the 12th and 13th June. Of the 146 candidates admitted, claims for exemption from sitting were allowed to the number of forty-four, and the remaining 102 candidates were examined, with the following results :—

Centre	Total Examined	Passed	Relegated
London . . .	50	36	14
Bristol . . .	12	11	1
Leeds . . .	8	7	1
Manchester . .	27	23	4
Newcastle . .	5	4	1
	102	81	21

The passed candidates, with those exempted—125 altogether—are as follows :—

AFIFY : Mohamed; 48 Ackers Street, Oxford Road, Manchester.
ALDRED : James Taylor; 64 Railway Road, Leigh, Lancashire.
ASHENDEN : Harold Campbell; Ventnor House, London Road, Canterbury.
ASLIN : Charles Herbert; 73 Lennox Road, Hillsboro', Sheffield.
ASTLEY : Percy Armitage; Glebe Place, Marsh, Huddersfield.
BACKHOUSE : Clifford Gerald; Rydal Cottage, Ash Road, Headingley, Leeds.
BAILY : Bruce William Seymour Stiles; 28 Thornhill Road, Mannamead, Plymouth, Devon.
BALDWIN : Herbert Donald; 40 Quarry Hill, Tonbridge, Kent.
BALDWIN : Walter; Holly Bank, Sale.
BEAVERSTOCK : Horace; 118 Newstead Grove, Nottingham.
BEGLEY : William Walter; 168 Liverpool Buildings, Station Road, Highbury, N.
BELL : Noel John Byron; Haverian College, Victoria Park, Manchester.
BONSER : Kenneth John; 160 East Dulwich Grove, S.E.
BOWES : Roy; 293 Oldham Road, Failsworth, Manchester.
BRAID : William; Kingsland Lodge, Stuart Place, Colombo, Ceylon.
BRIDGE : Joseph; 15 Bridgewater Road, Walkden, near Manchester.
BRINCKMAN : Rowland Egerton; c/o Miss M. Baxter, 2 Mortimer Road, Clifton, Bristol.
BUCKNOLE : Edward Hallett; 51 Walpole Road, Boscombe, Hants.
BULL : Joseph William; 55 Carlingford Road, Green Lanes, N.
BURLEIGH : Harold; 7 Priory Road, West Hill, Hastings.
BURNETT : Edgar; Weir House, Hickling, Melton Mowbray.
BURTON : Dudley James McPherson; "Dunain," 92 Pier Avenue, Clacton-on-Sea.
BYRT : Stanley Howe; 12 Ashley Hill, Bristol.
CAPES : Gareth Wilfred; 5 Kensington Square, W.
CHEEK : Cyril Cliff; 4 Balham Park Mansions, Balham, S.W.

CHRISTIE: Christopher; 13 Greenlaw Avenue, Paisley.
CLOUGH: Albert Rowland; "Highthorn," Main Road, Handsworth, near Sheffield.
CLOUGH: Ernest; Manners House, Haswell, near Sunderland.
COOKE: Robert McDowall Fothergill; Burnside, Prestbury, Gloucestershire.
COOPER: Frank Douglas; "High Beech," St. Matthew's Drive, St. Leonards.
CROUCH: Gerald Linford; High Street, Rottingdean, Sussex.
DAVIES: Idris; "North View," Milton Road, Weston-super-Mare.
DERRY: Charles; H.M. Office of Works, 22 Carlisle Place, S.W.
DOBSON: Richard; c/o G. E. Bolshaw, 106 Lord Street, Southport.
DODDINGTON: William; 133 St. Asaph Road, Brockley, S.E.
EDWARDES-EVANS: John; Ringway Vicarage, Altrincham.
EVANS: Eric Ewart; 86 Maiden Lane, Clubmoor, Liverpool.
EVANS: Thomas Cwmanne; 61 Munster Road, Fulham.
EVELEIGH: Graham Tom; "Martinhoe," Wembdon Road, Bridgewater.
FARRER: John Camplin; 2 Coleman Street, E.C.
FOALE: William Ernest; 29 Aldridge Road Villas, Westbourne Park, W.
FORSTER: Thomas; Architects' Office, North-Eastern Railway, York.
FRATER: Robert; c/o Mrs. Hall, Rosetta Park, 2 Knockbreda Road, Belfast, Ireland.
FYFE: Nelson; 24 Broughton Place, Edinburgh.
GOODYEAR: John Gorbell; "Summerhill," Hythe, Kent.
GOSTLING: Wilfrid Bernard; 42 Bowling Road, Ware, Herts.
GRAHAM: Robert McGregor; Red Hall, Quadrant Road, Newlands, Glasgow.
GRICE: William Stanley; Chapel House, Mattock Lane, Ealing, W.
GRIFFITHS: Edgar Rees; "Penbryn," Burry Port, Carmarthenshire.
GUSH: William George; Taunton School, Taunton.
HALL: Daniel Carby; Church House, Roundhay, Leeds.
HARDING: Charles Alfred; 46 Kersland Street, Hillhead, Glasgow.
HATHERELL: Eric James; 52 Croxted Road, Dulwich, S.E.
HAYTON: Arthur James; 751 Ashton New Road, Clayton, Manchester.
HEAD: George Leslie; 12 Mapesbury Road, Cricklewood.
HEYWOOD: Leonard; 591 Chorley Old Road, Smithills, Bolton.
HONOUR: Stanley; 4 Stockwell Park Road, S.W.
HORSLEY: Roland Cantis; "Vyse Lodge," Emsworth, Hants.
IZZY: Hussein; 65 Belsize Park Gardens, Hampstead, N.W.
JARVIS: Harold Edgar; "Rylstone," Godstone Road, Rotherham.
JENKINS: Frederick George Hayes; 11 Alma Terrace, Arthur Road, Windsor.
JONES: Charles Frederick; 9 Howard Gardens, Cardiff.
JONES: Ieuan Roland; 11 Gloddaeth Crescent, Llandudno.
JONES: Robert David; Min-y-don, Borth-y-Gest, Portmadoc.
JONES: Westbury Lloyd; Bronheulog, St. David's Road, Carnarvon.
JOHN: Lewis; 18 Vicarage Terrace, Cwmpark, near Treorchy, Glamorgan.
KELHAM: Cecil Herbert Langdale; Tangley Croft, Epsom, Surrey.
KELLEY: Norman; 12 Elms Avenue, Lytham.
LAMBERT: Frederick Henry; 52 Lorne Road, Lowestoft.
LANGLANDS: Cecil Walter; Mazon House, Epsom, Surrey.
LAPIERRE: Robert Tattersall; 64 Werneth Hall Road, Oldham.
LAWSON: Joseph Frank; St. Ringer's, Cirencester, Glos.
LEDGARD: William Armitage; Manor House, Thorner, Leeds.
LISTER: Harold Alfred; 8 Wyle Cop, Shrewsbury.
LLOYD: Albert; 5 The Promenade, Swansea.
LOGAN: James; 24 Crown Street, Newcastle-on-Tyne.
LOMER: Ernest Cecil; Ashdene, Regent's Park, Southampton.
LOWETH: Sidney Harold; 67 Downs Park Road, Hackney, N.E.
McBEATH: John Gordon; Birnam House, Sale.
MACKELLAR: Robert Norman Houghton; 3 Cathkin Road, Langside, Glasgow.
MACKENZIE: Gilbert Marshall; 28 Albyn Place, Aberdeen.
MACPHERSON: Malcolm Munro; The Manse, Elgin.
MARSHALL: George Andrew; 42 Canonbury Park South, N.
MATHER: Robert Arthur; 9 "Briardene," Moston Lane, New Moston, Manchester.
MEREDITH: John Nelson; Loggerhead, Mold, North Wales.
MORRIS: William Alexander; 10 Bolton Road West, Ramsbottom, Lancashire.
MORTIMER: Alan Lee; 23 Langham Avenue, Sefton Park, Liverpool.
MOSS: Donald John; 44 Linden Grove, Peckham Rye, S.E.
MOSS: Thomas Whitfield; 2 Bolling Road, Ben Rhydding, Leeds.
NEWBOULT: Bernard; Thorn Lea, The Grove, Shipley, Yorks.
NORMANTON: Joe; Ivy House, Barkisland, near Halifax.
OWENS: William Richard; 98 Anfield Road, Anfield, Liverpool.
PARKIN: William Gordon; 24 Bloomsbury Square, W.C.
PARTRIDGE: Leslie Horton; "St. Olave," Church Road, Forest Hill, S.E.
PERCIVAL: Francis Burlinson; Holly Lodge, Parkside Avenue, Wimbledon, Surrey.
PICKIN: Robert William; Highfield Bungalow, Kirkby-in-Furness.
RADCLIFFE: James; Furlane, Greenfield, *via* Oldham.
RADNOR: Cyril Bland; 11 Peascod Street, Windsor, Berks.
RAGHUNATH: Vasant; 36 Alexandra Road, Finsbury Park, N.
REES: Frederick William; 2 Graigwen Place, Pontypridd.
REEVE: Edmund Arthur; Somerset Villas, 38 St. Peter's Road, Margate.
RIDGE: Ernest Claude; 8 Barbican Terrace, Barnstaple.
ROLFE: Edwin Frederick; 51 Blandford Street, Baker Street, W.
ROSE: George Alfred; 54 King's Road, Wimbledon, S.W.

ROWNTREE : Edward Gilbert; Dormers, Wells, Southall.
RUTHERFORD : John Newton; 16 Eller Vale, Harrington, Cumberland.
SACRÉ : Lester Howard; East Hanningfield, Chelmsford.
SAGE : John Leigh Percy; Taunton School, Taunton.
SCHULKE : Paul C.; 337 City Road, Islington, E.C.
SKELDING : Percy; 28 Cromwell Road, Montpelier, Bristol.
STOBBART : Foster Rowland; 6 Crossley Terrace, Newcastle-on-Tyne.
STYTHE : Ernest Tudor; "Avallon," Carnarvon.
SWALLOW : Joseph Cedric; 2 Baldock Road, Letchworth.
TAYLOR : Martin Bartley; 37 Wheelwright Road, Gravelly Hill, near Birmingham.
THORBURN : Richard, jun.; c/o Mrs. Reilly, Methil Brae, Methil.
TRIGG : Gilbert John; "Highfield," Wickham, Hants.
TRIPP : William Maurice; "Clovelly," 26 Richmond Road, Altrincham, near Manchester.
VENN : George Oswald; "Featherfield," Latchford, Warrington.
WATERLOW : Adrian; 1 Maresfield Gardens, Hampstead, N.W.
WILSON : Stephen Grylls; 237 Upper Brook Street, C.-on-M., Manchester.
WINEBAUM : Goodman George; 13 Shiplake Buildings, Boundary Street, Bethnal Green, E.
WINGROVE : Edmund Percy; "Ethelston," Beaconsfield, Bucks.
WORTH : James Gerald; Knight's House, Royal Masonic School, Bushey, Herts.
WRIGHT : Sydney; 16 Derbe Road, St. Anne's-on-Sea.
YETTS : Laurence Muskett, B.A.Cantab.; 47 Finsbury Pavement, E.C.

The Intermediate.

The Intermediate Examination, qualifying for registration as *Student R.I.B.A.*, was held in the undermentioned provincial centres on the 12th, 13th, 15th, and 16th June; 127 candidates were examined, with the following results :—

Centre	Total Exam'ned	Passed	Relegated
London	85	37	48
Bristol	15	9	6
Leeds	5	3	2
Manchester . . .	13	4	9
Newcastle . . .	9	6	3
	127	59	68

The passed candidates, given in order of merit as placed by the Board of Examiners, are as follows :—

P.=Probationer.

PARK : William [*P.* 1904]; 9a Grove End Road, St. John's Wood, N.W.
PAGE : Thomas Alexander [*P.* 1907]; 14 Ravensbourne Terrace, South Shields.
MARCH : John Ewart [*P.* 1909]; Axbridge, Somerset.
MATTHEWS : John Bredel [*P.* 1907]; 24 Piercefield Place, Roath, Cardiff.
DONALDSON : Benjamin [*P.* 1909]; 238 Chillingham Road, Heaton, Newcastle-on-Tyne.
CLARKE : James Andrew [*P.* 1908]; 581 Cheetham Hill, Manchester.
FERGUSON : Robert Wemyss [*P.* 1910]; 25 Murrayfield Gardens, Edinburgh.
BENNETT : Philip Dennis [*P.* 1909]; 52 Farquhar Road, Edgbaston, Birmingham.
WYATT : Philip Humphry [*P.* 1908]; 39 Welbeck Street, Cavendish Square, W.
CHALKLEY : Thomas Henry [*P.* 1910]; 42 Grange Road, Bermondsey, S.E.
LONE : Reginald Wilcox [*P.* 1908]; Glengeldie, Montalt Road, Woodford, Essex.
CRONE : Harold [*P.* 1906]; 6 Selborne Road, Hove, Sussex.
CRASKE : Clifford Wigg [*P.* 1909]; 14 Elvin Road, East Dereham, Norfolk.
HARRIS : Leslie Youngman [*P.* 1906]; Clinton Terrace, The Park, Nottingham.
BROWN : Collings William [*P.* 1908]; 24 Bloomsbury Square, W.C.
FREAKER : Allan Lionel [*P.* 1909]; 12 Culmstock Road, Clapham, S.W.
McLACHLAN : Robert [*P.* 1909]; 23 Clarendon Road, Lewisham, S.E.
THOMERSON : Harold Albert [*P.* 1906]; Holmby House, Kenninghall Road, Upper Clapton.
FISHER : Stanley Howe [*P.* 1910]; "Elmsthorpe," 37 Barrington Road, Brixton, S.W.
MARCHINTON : James Edward [*P.* 1908]; 32 Bannerdale Road, Millhouses, Sheffield.
ODOM : John Henry [*P.* 1908]; Norton Lees Vicarage, Sheffield.
HOLDEN : William [*P.* 1907]; Lindenhurst, Cockton Hill, Bishop Auckland.
LAST : Frederic Bertram [*P.* 1906]; The Elms, Crayford, Kent.
CLEMES : Francis [*P.* 1908]; "Roebourne," Grove Park Road, Weston-super-Mare.
PHILLIPS : Rees [*P.* 1907]; "Delamere," Parsons Green, S.W.
PRICE : William Harold [*P.* 1906]; 57 Wellington Road, Bridgwater.
WALKER : Denis Henry [*P.* 1905]; 34 Westbourne Avenue, Hull.
ALLISON : William [*P.* 1907]; 82 Bramfield Road, Wandsworth Common, S.W.
WEINBERG : Judah [*P.* 1906]; c/o R. Frank Atkinson, Esq., 8 Sackville Street, Piccadilly, W.
LOVE : Robert Maclaren [*P.* 1910]; The Elms Farm, Littleover, near Derby.
SEMPLE : William London [*P.* 1908]; Glenavon, Moorside, Fenham, Newcastle.
WILLSON : Ernest [*P.* 1910]; 3 Rutland Road, Southport.
BURNETT : Andrew Stuart [*P.*]; Shawford Down, Hampshire.
ARCHIBALD : Howard Moir [*P.*]; Hôtel des Ecoles, 15 Rue de Lambre, Paris.
BANKS : William Arthur [*P.* 1905]; Conway Terrace, Corporation Street, Stafford.
BENISON : Norman Spencer [*P.* 1906]; 24 Harrington Square, N.W.
BRAMWELL : Guy [*P.* 1906]; 19 Reginald Terrace, Leeds.
BROOMHALL : Thomas Hargreave [*P.* 1905]; Haigh Hall, near Barnsley, Yorkshire.
CHARD : Charles Norman [*P.* 1907]; "Parkside," Westfield, Bridgwater, Somerset.
CHINE : William Wilmot Thorne [*P.*]; 17 New Cavendish Street, Portland Place, W.
COPPLESTONE : Thomas Stapledon [*P.* 1909]; 87 St. Sidwells, Exeter.
ERRINGTON : Lancelot Ralph Gawen [*P.* 1906]; 5 York Terrace, Regent's Park, N.W.
FRANCIS : Eric Carwardine [*P.*]; 16 Steeles Road, Haverstock Hill, N.W.
GODWIN : William Hubert [*P.* 1907]; 6 Second Avenue, Selly Park, Birmingham.

HANDS : Joseph Garnet [*P.* 1903]; 9 Johnson Mansions, Queen's Club Gardens, West Kensington, W.
HICKMAN : Ernest James [*P.* 1909]; 101 Kingswood Road, Moseley, Birmingham.
JENKINS : Trevellyn P. [*P.* 1908]; 4 Goat Street, Swansea.
LEDGER : Godfrey Horton [*P.* 1906]; Grove Lodge, Epsom.
LEGG : Theodore Ellis [*P.* 1906]; Tintern, Mornington Road, Woodford Green.
MEADOWS : Samuel Douglas [*P.* 1908]; 112 Caledon Road, East Ham, Essex.
MOORE : Harold Edward [*P.* 1906]; c/o H. B. Creswell, Esq., 10 Elborow Street, Rugby.
MORLEY : Cyril Savage [*P.* 1911]; 44 Bromley Road, Beckenham, Kent.
NEWTON : Cuthbert Edward [*P.* 1907]; Ashleigh, 3 Shearwood Road, Glossop Road, Sheffield.
NANDI : Rashbehari [*P.* 1910]; 5 Rochester Terrace, N.W.
NORTON : Bernard George [*P.* 1907]; Cumberland House, Leamington.
TERRELL : William Edward Wallis [*P.* 1909]; 102 Kendrick Road, Reading.
TOPHAM : Geoffrey Ronald Gilbertson [*P.* 1908]; 22 Crooms Hill, Greenwich.
TOWNLEY : Arthur Eric [*P.* 1909]; Ivyleigh, Oakfield Road, Selly Park, Birmingham.
YOUNG : Roland Keith [*P.* 1908]; 7 Bramham Gardens, South Kensington, S.W.

The following table shows the number of failures in each subject of the Intermediate Examination :

I. Classic Architecture	41
II. Mediæval Architecture	47
III. Renaissance Architecture	66
IV. General Questions	48
V. Theoretical Construction	36
VI. Descriptive Geometry	31
VII. Applied Construction	48

Colonial Examination.

The following candidate passed the Intermediate Examination held in Sydney in January last—viz. :

KEESING : Gordon Samuel; c/o Messrs. Kent & Budden, 129 Pitt Street, Sydney, N.S.W.

Exemptions from the Intermediate Examination.

The following Probationers, possessing the qualifications required by the regulations, have been exempted from sitting for the Intermediate Examination and have been admitted as Students R.I.B.A. :

ADAMS : Percy Joyce; "Rocklands," Palmerston Road, Buckhurst Hill, Essex [Architectural Association School].
ANDREWS : Percy Maguire; 7 Tavistock Mansions, Tavistock Place, W.C. [Architectural Association School].
AYLWIN : Guy Maxwell; 8 West Street, Farnham, Surrey [King's College Architectural School].
BHOWNAGGREE : Nasserwanji Mancherji Merwanji; 42 Harrington Road, South Kensington, S.W. [King's College Architectural School].
GRIFFIN : Douglas Morley; c/o G. R. Cripps, Esq., Ashley, Prenton Hill, Birkenhead [Liverpool University School of Architecture].
HARDING : Charles Alfred; 46 Kersland Street, Hillhead, Glasgow [Glasgow School of Architecture].
MOSS : Harold Edward; 46 Putney Hill, S.W. [Architectural Association School].
OWENS : William Richard; 98 Anfield Road, Liverpool [Liverpool University School of Architecture].
PRITCHARD : Ivor Mervyn; Gwynfa, Beaumaris, Isle of Anglesey [Architectural Association School].

The Final and Special.

The Final and Special Examinations, qualifying for candidature as *Associate R.I.B.A.*, were held in London from the 29th June till the 7th July. Of the 136 candidates examined, 59 passed, and the remaining 77 were relegated to their studies. The passed candidates are as follows—the † prefixed to a name signifying that the candidate entered for the Special Examination, which is designed for architects in practice and chief assistants exempted by the Council from the Preliminary and Intermediate Examinations and from submitting Testimonies of Study :

[*S.* = *Student.*]

ADAMS : Maurice Spencer Rowe [*S.* 1909]; "Edenhurst," Bedford Park, Chiswick, W.
ANGUS : Laurence Mortimer, M.A. [*S.* 1910]; 96 Heath Street, Hampstead, N.W.
†BARKS : Edward Ernest [*Special*]; 39 Oakley Crescent, Chelsea, S.W.
†BAXTER : Paget Logan [*Special*]; 37 Cambridge Street, S.W.
BENIANS : Hubert Joseph [*S.* 1908]; 2 Beresford Road, Goudhurst, Kent.
BENSLYN : William Thomas [*S.* 1905]; "Kylemore," Chesterton Road, Cambridge.
BESSANT : John Archibald [*S.* 1910]; 16A Eton Road, Haverstock Hill, N.W.
BEVIS : Richard Henry Percy [*S.* 1906]; Elm Grove Chambers, Southsea.
BLACKFORD : Arthur George [*S.* 1907]; 12 King's Avenue, Ealing, W.
BROAD : Kenneth Stephen [*S.* 1909]; 166 West Hill, Putney, S.W.
BROWN : Baldwin [*S.* 1903]; 19 Leamington Street, Bradford.
BROWN : Murray [*S.* 1910]; 55 Southampton Row, W.C.
BULLOCK : John Edgar [*S.* 1907]; Fernleigh, Blackheath, S.E.
CLARKE : Leonard Harris [*S.* 1910]; "Hawkstone," 38 Dragon Parade, Harrogate.
DAVIES : Joseph Charles Gladstone [*S.* 1909]; Tanyrallt, Morriston, Glamorgan.
DAVIES : William Frederick [*S.* 1907]; Brook House, Saughall Road, Chester.
†DAVIS : Charles [*Special*]; 58 Pennard Road, Shepherd's Bush, W.
†EDESON : Charles Alva [*Special*]; 65 Park Grove, Derby.
EVANS : Arthur Frederic [*S.* 1908]; Fazakerley House, Prescot, Lancashire.
FINNING : Leonard John [*S.* 1907]; "Sand Rock," Pinhoe, Exeter.
GARBUTT : Wilfred Thomas [*S.* 1909]; 7 Blenheim Mount, Bradford, Yorks.
GOODWIN : Bernard Malcolm [*S.* 1906]; Hurst View, South Park Hill Road, Croydon, Surrey.
GORRINGE : Wilfred S. [*S.* 1907]; 88 Clinton Place, Seaford, Sussex.

HAKE : Guy Donne Gordon [*S.* 1909]; 9 Park Mansions, South Lambeth Road, S.W.
HARDING : Charles Alfred; 46 Kersland Street, Glasgow, W.
HOME : Geoffrey Wyville [*S.* 1909]; 99 Gunterstone Road, West Kensington, W.
HOWITT : Thomas Cecil [*S.* 1908]; Brooklyn, Hucknall Torkard.
KEASLEY : John Norman [*S.* 1904]; "The Hawthorns," Meadvale, Redhill.
KNIGHT : Frank Wardel [*S.* 1909]; 9 Wellington Square, Chelsea, S.W.
LAWSON : Wilfrid [*S.* 1909]; 41 Woodbine Street, Gateshead-on-Tyne.
LEROY : Adrien Denis [*S.* 1909]; 21 Gore Road, South Hackney, N.E.
LOGAN : Philip Norman [*S.* 1908]; Eastfield, Southville, Bristol.
LONG : Charles William [*S.* 1908]; 108 Leigham Court Road, Streatham, S.W.
LUCAS : William [*S.* 1908]; 59 Weltje Road, Hammersmith, W.
MARTIN : Moritz Richard [*S.* 1905]; 14 Woodfield Road, Ealing, W.
MENNIE : Frederick Edward [*S.* 1907]; 46 Harford Street, Mile End, E.
†MERRIMAN : Harold Ian [*Special*]; 27 Young Street, Kensington West.
MOTTRAM : Alfred Hugh [*S.* 1910]; 18 Denning Road, Hampstead, N.W.
OWEN : George Burgoyne [*S.* 1909]; 7 Belsize Grove, Hampstead, N.W.
PARKER : Thomas Abel [*S.* 1908]; 37 Hall Street, Colne, Lancashire.
PATERSON : John Wilson [*S.* 1909]; Verbena Villa, 3 Sciennes Gardens, Edinburgh.
PRITCHARD : Ivor Mervyn [*S.* 1909]; Gwynfa, Beaumaris, Isle of Anglesey.
SAMSON : Hayward Lewis [*S.* 1904]; Ixworth Court, Palace Road, Streatham Hill, S.W.
SCOTT : Bernard Wardlow Habershon [*S.* 1909]; 125 Rodenhurst Road, Clapham Park, S.W.
SWANNELL : Charles Malcolm [*S.* 1908]; 4 Delaporte Gardens, Muswell Hill.
SWINDELLS : Francis Harold [*S.* 1909]; Longton Hall, near Preston, Lancs.
TAPPER : Michael John [*S.* 1908]; 10 Melina Place, St. John's Wood, N.W.
THORNTON : Harold [*S.* 1905]; West Croft, Dewsbury.
TICKLE : Arthur George Warnham [*S.* 1906]; Bassishaw House, 70A Basinghall Street, E.C.
WEST : Harry [*S.* 1906]; 312 Upland Road, East Dulwich, S.E.
†WESTBYE : Johannes Thorwaldsen [*Special*]; 1 Princess Road, Primrose Hill, N.W.
WHITEHOUSE : Arthur Eli Mitchell [*S.* 1907]; 12 Gibsons Road, Heaton Moor, near Stockport.
WIGZELL : Norman [*S.* 1908]; 8 Belle Vue Park, Sunderland.
WILLIAMS : Llewellyn Ebenezer [*S.* 1909]; "Upwood," Bridle Road, Purley, Surrey.
WILSON : Allen Woodward [*S.* 1903]; "Brinkdale," Park Road, Peterborough.
WINTER : Cecil Reynolds [*S.* 1907]; c/o G. A. Bligh Livesay, Esq. [*F.*], Christchurch Road, Bournemouth.
WORMALD : Harry [*S.* 1904]; 28 St. Luke's Road, Beeston Hill, Leeds.
WRIGHT : Christopher [*S.* 1907]; 19 Connaught Street, Hyde Park, W.
YOUNG : Allan Murray Campbell [*S.* 1905]; "Dalry," Marryat Road, Wimbledon Common, S.W.

The following table shows the number of failures in each subject of the Final Examination :—

I. Design	57
II. Principles of Architecture	54
III. Building Materials	15
IV. Principles of Hygiene	47
V. Specifications	24
VI. Construction, Foundations, &c.	48
VII. Construction, Iron and Steel, &c.	52

Election of Licentiates.

At the Council Meeting of the 20th July the following candidates were elected Licentiates R.I.B.A. in accordance with the provisions of By-law 12 :—

ABBEY : Frank (Huddersfield).
ADAM : John Sheddan (Sydney, N.S.W.).
ALEXANDER : James Montgomerie (Greenock).
ALLARDYCE : Henry William (Ilford).
ALMOND : Frederick John (Manchester).
ALMOND : William John.
ALTON : William Herbert.
AMBLER : Herbert (Leeds).
ANDERSON : Arthur E. (Montreal).
ANDERSON : Frederick William (Birmingham).
ANDERSON : John (Wellington, N.Z.).
ANDERTON : George (Manchester).
ANGELL : Robert.
ANGELL : Thomas Graveley.
APPLEBY : Alfred (Sheffield).
APPLEBY : Arthur (Sheffield).
ARDLEY : Clive Ewart.
ARMSTRONG, John (Oban, N.B.).
ARTHUR : John (Glasgow).
ARTHUR : John Maurice (Glasgow).
ASHFORD : William Harry.
ASHWORTH : Charles James (Winnipeg).
ATKINS : Norman Henry (Fareham, Hants).
AYRIS : Herbert Evans (Carlisle).
BAKER : Harry Edwin.
BAKER : Richard James (Cardiff).
BALL : Frederick (Nottingham).
BARKER : Walter John Raymond.
BARLOW-SMITH : John.
BARNES : Alfred Henry.
BASSETT-SMITH : Charles Aubrey.
BATCHELOR : Roger Beechworth (Cardiff).
BAXTER : Roderick Hildyar (Rochdale).
BEARD : Richard George (Kendal).
BEATTIE : George Nicholas (Glasgow).
BEATTIE-BROWN : William (Edinburgh).
BENTLEY : Arthur Fred Collins.
BENTLEY : Ernest Edward (Grimsby).
BENTLEY : Robert (Whitehaven).
BEAUMONT : Frederick Fox (Halifax).
BERTODANO : Henry Stratford de.
BIDDULPH-PINCHARD : Charles Henry.
BIRAM : Ernest Frank Stuart (St. Helens, Lancs).
BLACK : Percy John.
BLACKWELL : John Thomas (Kettering).
BLAGROVE : George Henry.
BLAIN : William John (Glasgow).
BLAIR : William Wallace (Winnipeg).
BLOMFIELD : Alfred William.
BLYTH : Henry Charles William (Lowestoft).
BOSWELL : George Arthur (Glasgow).
BOWIE : George Pigrum (Vancouver, B.C.).
BOYD : William Craig (Glasgow).

BRAGG : Henry.
BRAMELD : Henry Creswick Wilson (Sheffield).
BREEDS : Arthur Owen.
BRENAN : George Woulfe (Oban).
BREWER : Horace George Charles.
BRICKNELL : Thomas Mortimer (Glamorgan).
BRIDSON : Thomas Ridgway.
BROADBENT : Fred (Leeds).
BROOK-GREAVES : Francis William (Sheffield).
BROWN : Alfred (Luton).
BROWN : Alfred B. (Manchester).
BROWN : John (Northampton).
BROWN : Philip Ernest (Sheffield).
BROWNE : Flint.
BRUCE : Donald (Glasgow).
BRUNTON : Frederick Septimus.
BRYCE : George Ronald.
BRYDEN : Andrew Francis Stewart (Glasgow).
BRYSON : Robert Edward.
BUCK : William Henry (Montreal, Canada).
BULLOCK : Ernest Havergal.
BUNE : John Godfrey.
BURDEN : Charles Frederick (Ontario).
BURDWOOD : Stanley Harry.
BURGESS : Harold Thomas.
BURGESS : Julian Gulson.
BURTON : John Edward (Norwich).
BUSH : Edwin (Preston).
BUTLER : Ernest Newman (Calgary, Alberta).
BUTTERWORTH : Thomas (Manchester).
CABLE : Charles Vincent (Hartley Wintney, Hants).
CAIRNS : James Davidson (Edinburgh).
CAMERON : Robert Macfarlane (Edinburgh).
CAMPBELL : David Williamson (Lockerbie).
CAMPBELL : Hugh (Glasgow).
CAMPSALL : Wilfred Tom (Sheffield).
CARRE : Bingham.
CARRICK : William Arthur Laurie (Glasgow).
CARRUTHERS : James (Glasgow).
CARSWELL : Ronald (Glasgow).
CASSELS : Thomas McGill (Ayr, N.B.).
CATLING : Frank.
CATOR : Arthur Charles Albemarle (Bulawayo).
CHAMBERS : Frederick (Goole).
CHERRY : Harold Griffith.
CHRISTIE : James (Shanghai).
CHUBB : James Arthur.
CLARK : Joseph John.
CLARK : Harold Forbes (Manchester).
CLARKSON : William.
COBB : Thomas Keightley (Northampton).
COBBAN : James (Aberdeen).
COCK : Alfred Myddleton.
CODRINGTON : Joseph William Keal.
COLLINS : Joe (Oldham).
CONSTABLE : William (Edinburgh).
COOKE : Percy Rogers (Johannesburg).
COOPER : George (Rotherham).
COOPER : George William (Sleaford).
COPLAND : George Donaldson (Glasgow).
CORMACK : James Noble (Potchefstroom, Transvaal).
COTMAN : Grahame (Norwich).
COURTAUL : John Sewell.
COUSINS : Charles H. (Swansea).
COWELL : Herbert Lee (Newquay).
CRAIG : George (Leith).
CRAIGIE : James Hoey (Glasgow).
CRAWFORD : Andrew Rennie (Glasgow).
CREMER : Frank.
CRISP : James Gregory (Cheltenham).
CROFT : Christopher (Northampton).
CROMB : John Burns (Hamilton, N.B.).
CROSSLAND : James.
CUDDY : Albert Edward (Liverpool).
CULPAN : Andrew (Halifax).
CUNLIFFE : Thomas Hethorn (Manchester).
CUNNINGHAM : Samuel Baikie (Pretoria).
CURREY : Harold Wynne.
CUTHBERT : David Matheson (Perth).
DAN : Hugh (Glasgow).
DANNATT : Arthur Richard.
DAVEY : Roger Thomas (Chatham).
DAVIDSON : Alexander (Coatbridge).
DAVIDSON : George (Bridge of Allan).
DAVIDSON : John.
DAVIS : John (Lincoln).
DAWSON : Henry Holmes.
DAWSON-PEARCE : Henley (East London, S.A.).
DEAN : Benjamin Sagar (Manchester).
DENTON : Herbert (Sandal, Wakefield).
DEWAR : Alexander Cumming (Fife).
DE WILDE : George Sylvan.
DIBDIN : Ernest Charles Rowe.
DODD : Henry Huntingdon (Dover).
DODGSHUN : Leslie Sydney (Leeds).
DODSON : Sam (Peterborough).
DONALDSON-SELBY : Thomas Tyssen Grey.
DOWNER : Ernest Gordon Ross (Newport, Mon.).
DRAPER : William Basil Yeatman (Singapore).
DREW : Edward (Swindon).
DRIFFIELD : William (Knaresborough).
DUNCAN : Allan Ferguson (Glasgow).
DUNCAN : William Liddle (Turriff).
DUNCANSON : Edward Ford.
DUNHAM : William John (Norwich).
DUNN : John Glen (Cambuslang).
DURLACHER : Edward Ford.
DURST : Austin.
DYKES : Thomas (Glasgow).
EDLIN : Vernon Annesley.
ELLIS : John (Stonehaven, N.B.).
ELLISON : Francis Beaumont (Wakefield).
ELLISON : Robert Kitching (Huntingdon).
ELTRINGHAM : John (Sunderland).
EMMETT : Henry Alfred.
ENGLAND : Ernest Sugden (Oldham).
ETHERINGTON-SMITH : Harry Launcelot.
EVANS : George De Lacy (Melbourne).
EVANS : George Vincent (Pontypridd).
EVANS : John Morlais (Neath, Glamorganshire).
EVANS : Norman (Southend-on-Sea).
FAIRBAIRN : Walter (Edinburgh).
FARQUHAR : George.
FARRER : Percival Inglis (Salisbury).
FATKIN : James Newton (Newcastle-on-Tyne).
FENN : Frederick (Manchester).
FERGUSON : William (Glasgow).
FINN : Harry Reginald (St. Albans).
FLEEMING : William Henry (Wolverhampton).
FLEMING : George Granger (Pretoria).
FLOYD : Francis Hayward (Newbury).
FORRESTER : Alfred (Middlesbrough).
FOSTER : Francis Roland (Montreal).
FOX : Thomas John.
FOXALL : Harry (Carlisle).
FRANCE : James Harold (Manchester).
FROST : Herbert (Gosport).
GAGNON : Willford Arthur (Montreal, Canada).
GALE : Ernest Sewell.
GALE : William Willis (Carshalton).
GALL : John Hinton (Inverness).
GALLETLY : John Thomas (Edinburgh).
GALLOWAY : David Wishart (Brechin).
GANNON : William (Petersfield).
GARDEN : Hubert McBain Gardiner (Sydney, N.S.W.).

GARDNER : Alexander (Glasgow).
GARDNER : Alexander McInnes (Glasgow).
GARDNER : Gilbert Thomas Francis (Oxford).
GARROOD : Thomas Merrison.
GEORGE : Clement (Aberdeen).
GEORGE : Wilfred Harold (Cheltenham).
GHOSE : Rajendra Chandra (Chinsurah, India).
GIBSON : William Garnett (Crawley, Sussex).
GIBSON : William Stephen (Coatbridge).
GILL : William Ernest (Bury).
GILLESPIE : James (Edinburgh).
GLENDINNING : James John (Halifax).
GLENNIE : Frederick Forbes.
GOODMAN : James Hugh (Reading).
GOODRHAM : Henry Robert.
GOODSIR : John Proudfoot (Falkirk).
GOODWIN : Alexander Laurie (Edinburgh).
GOSLING : Frederic Arthur.
GOSLING : John Henry Charles (Portsmouth).
GRAHAM : Patrick H. (Gisborne, N.Z.).
GRANT : Andrew (Toronto).
GRAYSON-BROWN : W. (Ontario).
GREEN : David Frederick (Bolton).
GREEN : Herbert Percy (Market Harborough).
GREIG : Alfred (Edinburgh).
GRIFFITH : Henry Sandham (Victoria, B.C.).
GRIFFITHS : Thomas Henry (Stoke-on-Trent).
GRIFFITHS : Walter Austin (Pontllanfraith, Mon.).
GRIMSHAW : Kershaw (Stockport).
GROVE : Arthur.
GROVE : Richard Thomas.
GUTTERIDGE : Alfred Fowler (Southampton).
HAGGER : George John (Worthing).
HAIL : Douglas Pairman (Edinburgh).
HALL : Amos (Leicester).
HALL : Charles Russell (Congleton).
HARDING : Herbert W. (Bristol).
HARDING : H. R. (Leicester).
HARRISON : C. René.
HARRISON : Edmund James.
HARRISON : Frederick (Leicester).
HARRISON : John Edwin (Bloemfontein).
HARRISON : Louis (Deniliquin, N.S.W.).
HARRISON : Reginald Arthur Victor.
HARTLEY : George Alfred (Oldham).
HAY : Edward A. B. (Glasgow).
HAYLOR : Benjamin.
HECTOR : John Black.
HERRALD : D. Easton (Alberta, Canada).
HEWLITT : Arthur George (Hong Kong).
HICKS : Herbert (Broadstairs).
HIDER : Ernest James Wedlock.
HIGGINBOTTOM : George Harry (Manchester).
HIGGINS : Francis Coleman.
HIGGINS : Henry Edward (Glasgow).
HILL : Thos. Jackson (Manchester).
HINDMARCH : John G. (Stockport).
HODGSON : Victor Tylston.
HOFFMAN : George Spencer.
HOGG : William Johnston (Newcastle).
HOLGREAVES : William Pearson (Ebberston, Yorks).
HOLLAND : Alwyn Henry (Sheffield).
HOLMAN : George Edward.
HOLT : George Dominic (Manchester).
HOLWAY : Percy Yell (Sheerness).
HOOPER : Ernest Fray (Exeter).
HOPE : Arthur John (Bolton).
HORSFIELD : Thomas Baptist (Manchester).
HOULKER : William, jun. (Nelson, N.Z.).
HOULT : John Winnall.
HOWARTH : Fred (Towyn).
HOWIE : William Holmes (Glasgow).
HOYLAND : Arthur James (Manchester).
HUCKER : David.
HUDDART : Arthur (Whitehaven).
HUGHES : Arthur Ernest (Wolverhampton).
HUGHES : William Alfred.
HULME : Edwin (Liverpool).
HUNT : Herbert Salmon.
HUNTER : John Marshall (Montreal).
HUNTINGDON : Frederick James (Montreal).
HUNTLEY : Frederick Arthur (Bristol).
HUTTON : John (Kendal).
ILES : Ernest Stanley.
INGLIS : Alexander (Hawick).
INGRAM : Herbert Clavell.
IRVIN : Benjamin Robert (North Shields).
JACKSON : Sydney Alexander (Lancaster).
JAMES : Alan Gossett.
JARVIE : John Stirling (Perth).
JENNISON : John (Manchester).
JERDAN : John (Edinburgh).
JOHNSTON : James V. (Londonderry).
JOHNSTON : Joseph Marr (Leith, N.B.).
JONES : Francis, jun. (Manchester).
JONES : Robert Cadwaladr (Blaenau Festiniog).
JONES : William Alban (Leeds).
JORDAN : Sidney Thomas.
JURITZ : John William (Cape Town).
KAY : Claud John (Horsham).
KEMPTHORNE : Charles Henry (Cardiff).
KENNEDY : William James (Edinburgh).
KENT : Arthur.
KERR : James (Lanark).
KERR : Thomas.
KIDD : William Alexander (Glasgow).
KING : George William (Toronto).
KING : John (Wishaw).
KIRK : Albert Holmes (Dewsbury).
KIRK : Walter (Withyham).
KLINGENDER : Frederick Louis (Melbourne).
KNAPMAN : Harry Lethbridge (Northampton).
KOCH : Wm. Rudolph Waldemar (Hobart, Tasmania).
KYLE : Arnold Woodrow (Durham).
LACEY : Arthur Ernest.
LAIRD : James Austin (Glasgow).
LAMBERT : Wilberforce Page (Alberta, Canada).
LANCASHIRE : John (Sheffield).
LANGHAM : Claude Stephens (Leicester).
LANGLEY : William (Leicester).
LANSDOWN : Frank (Edmonton, Alta.).
LAVENSTEIN : Ezra (Johannesburg).
LAWRENCE : Charles Alexander (Wellington, N.Z.).
LAWRENCE : Charles Ernest (Newport, Mon.).
LAWSON : Sydney H. (Newcastle).
LAWTON : Wilfred (Manchester).
LEAH : William (Gloucester).
LEMAN : Montagu William (Great Yarmouth).
LEMAN : Thomas Melville (Glasgow).
LENNOX : Gavin (Glasgow).
LESTER : John Milne.
LETTS : Thomas Hollins (Montreal).
LEWIS : John Martin (Madras, India).
LEWIS : Lewis (Cardigan).
LEWTON : William George (Shinfield, near Reading).
LICKELY : Alexander (Dundee).
LINDSAY : James Aynsworth (Edinburgh).
LINES : Roland Walter (Alberta, Canada).
LISTER : Edward William (Plymouth).
LISTER : Thomas Gerard (Newport, Mon.).
LITTLE : Tom Curry (Vancouver, B.C.).
LIVESAY : Frederick Howard (Bishop Auckland).
LLOYD : Edwin Ambrose (Blackburn).
LOCKHART : John Whitelaw (Ayr).
LODGE : Percy Dean (Manchester).
LOGAN : Thomas Munro (Aberfeldy, N.B.).

LORIMER : Alexander (Edinburgh).
LOVEYS : Thomas (Newton Abbot).
LOWBRIDGE : George Cecil (Stafford).
LOWE : James (Dundee).
LOWRY : Frederick (Leigh-on-Sea).
LYNES : George G. (Dublin).
McARTHY : David (Edinburgh).
MACKAY : William (Melbourne).
McKINLAY : Andrew (Rothesay).
MACKINTOSH : Chas. John MacLean (Fort William).
McKISSACK : James (Glasgow).
M'LACHLAN : James (Edinburgh).
McLAREN : Peter Robert (Edinburgh).
MacLEOD : John Duncan (Edinburgh).
MacMATH : Daniel W. (Glasgow).
MacNAUGHTAN : Alan George (Glasgow).
MACNIVEN : George Donaldson (Edinburgh).
McRAE : Alexander (Edinburgh).
MacRAE : Ebenezer James (Edinburgh).
McWILLIAM : John Alexander (Edinburgh).
MAIDMAN : Edward Charles Henry (Edinburgh).
MALCOLM : Alexander Nisbet (Grangemouth).
MANNING : George William.
MANNING : William Charles (Newmarket).
MARRIMAN : George Frederick Maskelyne.
MARSTON : Charles Frederick (Sutton Coldfield).
MARSTON : Herbert William Henry (Sutton Coldfield).
MARWICK : Thomas Craigie (Edinburgh)
MATTS : Malcolm Waverley.
MAY : Thomas Frost.
MAYBURY : John Henry (Manchester).
MAYOR : R. Yates (Northampton).
MEGGITT : Ernest (Sheffield).
MEIKLE : Joseph Abraham.
MILES : George Scott.
MILLAR : Thomas Andrew (Glasgow).
MILLER : Charles George.
MILLES-DIAMOND : Harold Victor (Chandlers Ford).
MILLS : Evan Holford (Llanidloes).
MITCHELL : Alexander McGregor (Coatbridge).
MITCHELL : Henry (Glasgow).
MITCHELL : Robert Matthew (Crieff, N.B.).
MOFFAT : Bowland Brockman (Biggleswade, Beds).
MOODEY : Ernest Edward (Broadstairs).
MORGAN : Edgar Percy (Reading).
MORRIS : Wilmot Banks (Bolton).
MORRISON : James Inch (Edinburgh).
MORRISON : Latto Alexander (Biggar, N.B.).
MORTON : Robert Reginald (Montreal).
MOYE : Henry Hayward.
MURDOCH : Walter David (Wellington, N.Z.).
MURPHY : Bailey Scott (Edinburgh).
MURRAY : Thomas Henry (Consett, Co. Durham).
MUSTO : Joseph Robert.
MYERS : Legender William.
NEIL : Hamilton (Clydebank).
NEWMAN : Augustus William.
NICHOLLS : John H. (Sunderland).
NISBET : Edgar Charley.
NISBET : John Bryan (Edinburgh).
NISBETT : Hamilton More (Edinburgh).
NORMAN : Geoffrey.
NORRIS : James Herbert (Godalming).
NOWILL : Henry (Sheffield).
NUNWEEK : Arthur (Sheffield).
OCHILTREE : Jack Learmonth (Perth, W. Australia).
OGDEN : Herbert (Sheffield).
OGILVY : Gilbert F. M.
OLIVER : Charles Bryan (Bath).
ORPHOOT : Barnett Napier Henderson (Edinburgh).
ORWIN : James Barclay (Southend-on-Sea).
OSBORN : George (Sheffield).
OSBORNE : William Robert (Chippenham).
OVENDEN : Hugh (Preston).
PAGE : Charles Ernest (Newport, Mon.).
PAGE : Joseph (Leeds).
PAIN : Frederick George.
PALMER : Bertram Henry (Exeter).
PALMER : Ernest Hugh (Exeter).
PALMER : Frederick Charles Richard.
PARKER : Arthur Thomas (Lewes).
PARKER : Frank (Pretoria).
PARKER : Parry (Letchworth, Herts).
PARKER : Stanley.
PATERSON : Gavin (Hamilton).
PATERSON : George Andrew (Glasgow).
PATTERSON : William.
PAUL : Arthur Gorman Balfour (Edinburgh).
PEACE : Thomas Smith, jun. (Orkney, N.B.).
PEARCE : Edward Andreas.
PEACOCK : John Holden (Arbroath).
PEDEN : Frank (Montreal, Canada).
PERRAULT : Joseph (Montreal, Canada).
PERRY : Marten Bingham.
PETERS : Samuel Frank (Winnipeg, Manitoba).
PETTER : John (Yeovil).
PHILLIPS : George Ridley.
PHILPOT : Stanley (Tunbridge Wells).
PINCHBECK : John Banner.
PINKERTON : William Edward.
PITTRER : Francis Léon.
POPE : Morley (Montreal).
PORTER : Harry Sugden (Manchester).
POTTER : Harold Marten (Worthing).
POTTER : Joseph Walter (Prince Rupert, B.C.).
POTTS : Walter (Sheffield).
POWELL : Daniel (Liverpool).
PREECE : John (Pontypridd).
PRESTWICK : James Caldwell (Leigh).
PRIEST : Arthur (Chester).
PROCTER : Edward.
PRYER : Ernest Arthur (Gloucester).
RATCLIFFE : George (Norfolk).
RAVENSCROFT : Burton Stephen.
RAWCLIFFE : George Herbert (Sheffield).
RAYNER : Frederick John (Newhaven).
REED : Percy Walter.
REID : Peter (Kirkcaldy).
REID : William (Glasgow).
REW : Noël Ackroyd (Great Berkhamstead).
RHODES : Joseph (Leeds).
RICHARDS : John Vaughan (Crickhowell).
RICHARDS : Llewelyn Lincoln (Wellington, N.Z.).
RICHARDS : Walter Armstrong.
RICHARDSON : James.
RIDLER : Walter (Tewkesbury).
RILEY : Charles Henry (Aylesbury).
RILEY : George (Oswaldthwistle, nr. Accrington).
RIMMER : Harry (Ormskirk, Lancs).
ROBB : George (Wellington, N.Z.).
ROBERTS : Evan (Oldham).
ROBERTSON : Alexander (Inverkeithing, Fifeshire)
ROBERTSON : A. K. (Edinburgh).
ROBERTSON : James David (Johannesburg, S.A.)
RODDIS : Alfred John.
RODERICK : Thomas (Aberdare).
ROGERS : William Herbert.
ROPER : John Edwin (Leicester).
ROSS : Robert Thorn (Coatbridge).
ROWBOTTOM : George (Stalybridge).
ROWLEY : Charles Aubrey (Bristol).
RUFFLE : Hugh William Ellis.
RUSSELL : John (Oldham).
SAGE : Edgar.

SALMOND : David (Glasgow).
SALMOND : William (Dundee).
SANDERSON : Bertie (Buckingham).
SAVAGE : John.
SCLANDERS : William Wardlaw (China).
SCOTLAND : John (Airdrie).
SCOTT : Alexander Hamilton (Paisley).
SCOTT : Anthony Colman.
SCOTT : Charles Marriott Oldrid.
SCOTT : Thomas Henry Birchall.
SEXTON : George Alexander.
SHARP : Abraham (Bradford).
SHARP : Leonard (Hull).
SHARP : Robert (Ceylon).
SHEEN : William.
SHEPPARD : Raymond (Wellington, N.Z.).
SHENNAN : David (Montreal, Canada).
SIMISTER : Ernest (Oldham).
SIMPSON : George (Glasgow).
SIMPSON : Hugh Dykes (Hamilton).
SMEDLEY : George Palmer.
SMITH : Archibald Fowler (Southampton).
SMITH : David (Dundee).
SMITH : Edward Ashby.
SMITH : Edwin Evan (Brisbane, Queensland).
SMITH : William Mackenzie (Johannesburg).
SNELL : John Saxon.
SNOWDEN : Thomas (Hull).
SOUZA : Antonio Vincente de (Rangoon, Burma).
SPIGANOVICZ : Victor James de (Edinburgh).
SPINK : Herbert (Windsor).
STALLYBRASS : Basil Thorold.
STAMFORD : Bernard B. (Beverley).
STEPHENS : Samuel Cooper (Birmingham).
STEVENS : Alfred (Exeter).
STEVENSON : Ernest (Pretoria, S.A.).
STEWART : John (Glasgow).
STOKE : Ernest Edward (Bournemouth).
STONES : Edgar.
STREETER : Edwin Frederick William.
STRONG : Francis David (Pretoria).
STROUD : Albert William.
STURROCK : David Woodburn (Glasgow).
SUTHERLAND : Eric Alexander (Glasgow).
SWALES : Thomas (Rangoon, Burma).
SWAN : James Henry.
SWINDELLS : Ernest James Jennings (Leicester).
SYMES : William Charles.
TAIT : David Alexander (Grangemouth).
TAYLOR : John (Longton, Staffs).
TAYLOR : John Edward (Manchester).
TAYLOR : Thomas (Oldham).
TAYLOR : Thomas E. (Annfield Plain, Co. Durham).
TEATHER : John Charles Amory (Sheffield).
THACKRAY : John William (Leeds).
THOMAS : Henry William.
THOMPSON : Herbert (Blackpool).
THOMSON : Henry (Dundee).
THOMSON : James (Airdrie).
THOMSON : James (Dundee).
THOMSON : William Erskine (Dundee).
TIDD : Charles William (St. Helens).
TIFFIN : Hugh Stammers.
TIMBS : Richard Percy (Derby).
TINNISWOOD : Alfred (Carshalton, Surrey).
TINNISWOOD : George (Manchester).
TONAR : Lewis Francis John Scott (Exeter).
TONKIN : Wilfrid Wiseman (Johannesburg, S.A.).
TOUGH : Joseph John (Greenock).
TUCKER : George Graham (Ramsgate).
TURNER : Ernest William (Sheffield).
TURNER : George Arthur.
TURNER : Robert Charles (Shanghai, China).
TWELLS : Albert Edward (Hill Top, Notts).
TWIZELL : George Sterling (Vancouver).
UNSWORTH : William (Liverpool).
VENNING : Herbert Reed (Liskeard).
VERLYCK : Georges Louis Marie (Essex).
VERMONT : Joseph.
WADE : John William (Manchester).
WALKER : Fred (Cradley Heath, nr. Birmingham).
WALKER : Ronald (Stirling).
WALKER : James Carruthers (Glasgow).
WALKLEY : Albion Henry (Melbourne).
WALSH : Joseph Frederick (Halifax).
WALTON : George.
WALTON : Henry Denison (Glasgow).
WARD : Edmund John.
WARD : Jesse William (Wimbledon).
WARD : William Henry, Junior (Birmingham).
WARDLE : Joseph Whitfield (South Shields).
WATKIN : Ernest T. (Burslem).
WATSON : George Mackie (Edinburgh).
WATSON-JERDAN : J.
WATSON : John (Glasgow).
WATSON : Walter Crum (Edinburgh).
WATSON : William Harold (Wakefield).
WAUMSLEY : Thomas Herbert (Nottingham).
WEAVER : Thomas (Birmingham).
WEBSTER : John Douglas (Sheffield).
WEDDELL : James Wilkie (Glasgow).
WEEKES : Joseph (Newport, Fife).
WELLS : William (Grimsby).
WHEELER : Arthur Wakefield (Edmonton).
WHITBURN : Henry Alfred.
WHITELAW : Charles Edward (Glasgow).
WHITTAKER : Frank Ernest (Manchester).
WILKINSON : Philip Arthur Cawte.
WILLIAMS : Albert Charles.
WILLIAMS : Richard John (Kettering).
WILLIAMS : William Harold.
WILLIAMSON : Thomas (Dublin).
WILSON : Allen (Johannesburg, S.A.).
WILSON : Andrew Oswald (Perth, Westn. Australia).
WILSON : Henry (Polmont, N.B.).
WILSON : James Jackson (Glasgow).
WILSON : John (Edinburgh).
WILSON : Reginald T. (Bradford).
WINGATE : Alexander (Glasgow).
WINN : Joseph Harrison (Derby).
WOODESON : William (Manchester).
WORSSELL : James Lloyd.
WRIGHT : Alexander (Glasgow).
WRIGHT : Alfred Robert Linns (Perth, W. Australia).
WRIGHT : George Alexander (San Francisco, U.S.A.).
WRIGHT : James, jun. (Glasgow).
WYLES : John Walter.
WYLLIE : David Valentine (Glasgow).
YERBURY : John Edwin.
YORKE : Francis Walter Bagnall (Birmingham).
YOUNG : Alexander (Newton Stewart, N.B.).

ALLIED SOCIETIES.

Royal Victorian Institute of Architects. — The Report of the Council for the year 1910–11 states that the membership now numbers 52 Fellows, 4 Hon. Fellows, 50 Associates, and 26 Students. During the year, the Council have effected an alliance with the parent Institute in London. Nearly twenty years ago, negotiations for alliance were entered upon, but, on account of a matter which purely concerned Australian practitioners, in which neither body was prepared to make any concession, the negotiations lapsed. Within

the last year or so, by means of personal interviews between the officers of both bodies, the way was made clear, and, a formal application for alliance having been made, the Council of the R.I.B.A. admitted the Victorian Institute as an Allied Society, stating "that the successful conclusion of this alliance had given the greatest satisfaction to the Council, who welcome the establishment of such close and friendly relations with one of the oldest and most distinguished of the architectural societies of the Empire." The Council of the R.V.I.A. expresses the conviction that the alliance will be beneficial to the interests both of architects and architecture in this and the other States throughout the Commonwealth. The R.I.B.A., having sent out to the Victorian Institute a number of forms of application for admission to the new class of Licentiates, particulars of the degree were published in the "Proceedings," and the Council report that a goodly number of applications have been made. On behalf of the various State Institutes of Architects, Engineers, and Surveyors, the Council have interviewed the Minister for Home Affairs concerning the proposed competition for the laying out of the Federal Capital. A year ago, the Department was asked to furnish the Institute with a copy of the conditions of this competition, but the request was not complied with. Immediate and successful steps were taken to secure joint action on the part of the various State Institutes of Architects, Engineers, and Surveyors. The Institutes of the three sister professions in N.S.W. have agreed to work together, and in Victoria it is anticipated that similar united action will be effected. Until last week, when a deputation from the Council waited upon the Minister for Home Affairs, little or nothing was known of the conditions of competition beyond the amounts of the three prizes offered. The contour map of the site was inspected by the representatives of the Institute, and sufficient information was given by the Minister to warrant the calling together of a conference of all the Institutes of Architects in the Commonwealth, each Institute conferring with the Institutes of Engineers and Surveyors, if any, in its respective State. On the day following the deputation a *précis* of the proceedings was despatched to all the States, with an urgent request that the views of the conference should be laid before the Minister within the stipulated period of one month. The Council hope that vigorous and united action by the profession may succeed in making this competition, which is to be of a world-wide character, one which shall be conducted under the fairest possible conditions, and which will, in response, call forth a goodly number of high-class designs. The report goes on to state that the Council nominated the President for membership of the Town Planning Conference initiated by the R.I.B.A. during last year. A careful study of the question by Australian architects will, the Council hope, have the effect of preventing the mistakes of the old world from being repeated in these new lands, hence saving the community from incurring great expense in this direction. The Council trusts that the Australian civic centres will be laid out in the future with more æsthetic treatment than has been accorded to them in the past. The Building Regulations proposed by the suburban municipalities, and adopted after conference with the Council of the Institute, requiring the authority of a Parliamentary Bill, this Bill was duly introduced and passed its three readings in the Legislative Council, and its first reading in the Assembly. At this stage there were tacked on to it certain clauses which embodied the proposed Melbourne Building Regulations, many portions of which were still being strenuously opposed by the Council, in conjunction with the delegates from the Chamber of Commerce. This extension of the scope of the Bill was therefore opposed by an emergency committee of the Victorian Institute as soon as it became aware of the proposal. As a consequence of the opposition which was thereupon manifested, the Bill was not proceeded with. The subject of prime costing is still a matter of conference between the Master Builders' Association and the Council. At the conference held on 2nd August, the subject was generally dealt with, and it is expected that soon this matter may be disposed of for good. The Council, however, have passed the following resolution dealing with the subject:—"The Council is agreed that works 'prime costed' should be fixed by experienced and approved men." Concerning competitions, the Council have passed a resolution to the effect that they will be pleased to advise on all classes of proposals for competitive designs which the public may submit to it. It is now a condition required by the Institute that the drawings in any competition shall be exhibited in a convenient place after the awards have been made. The Council has further resolved that, in the selection of designs, the proprietor shall (not may) call in experts to advise.

The Cape Institute of Architects.—A general meeting of this Institute was held on 13th June in the board-room of the South African Association. The President reported as to the present position in regard to the Architects' Registration Act. He said that the various Institutes had agreed on nearly all matters, the only question not yet settled being whether the Act should be administered for the first six months from Cape Town or Johannesburg. The President expressed the hope that all members would obtain copies of the proposed Municipal Act, and study it, before next meeting, when it was to be discussed, as it required modifying in many important features. The President gave notice that at the next general meeting he would raise the question as to the desirability of instituting a class for students for making sketches and measured drawings of old Cape buildings, and of offering a prize or medal for such work. A letter from the Publicity Association was read, asking the Institute to appoint delegates to serve on the Advertising and Attractions Committee, where their advice on matters relative to the improvement of the Peninsula would be valuable. Messrs. Arthur H. Reid, F. R. Kendall, and J. Morris were appointed. A letter from the Royal Institute of British Architects was read, stating that Licentiates would be elected until 30th June 1912, and that applications must be received in London before 31st May 1912. Intending applicants from South Africa would save time by sending their application through the local secretary of the R.I.B.A., Mr. Arthur H. Reid.

Architects' Benevolent Society.—*Errata*: In the recent issue of the Society's Red Book the name of Mr. Henry Lovegrove should have been associated with that of Mr. C. H. Brodie as joint auditor, and the name of Mr. J. Henry Ball included in the list of annual subscribers for the amount of £2 2s.